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Volume 5 No. 2 February 1990
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AMIGA Desktop Publishing - A New Era?
A Desktop Publishing Primer
A Beginner's Guide to Desktop Publishing

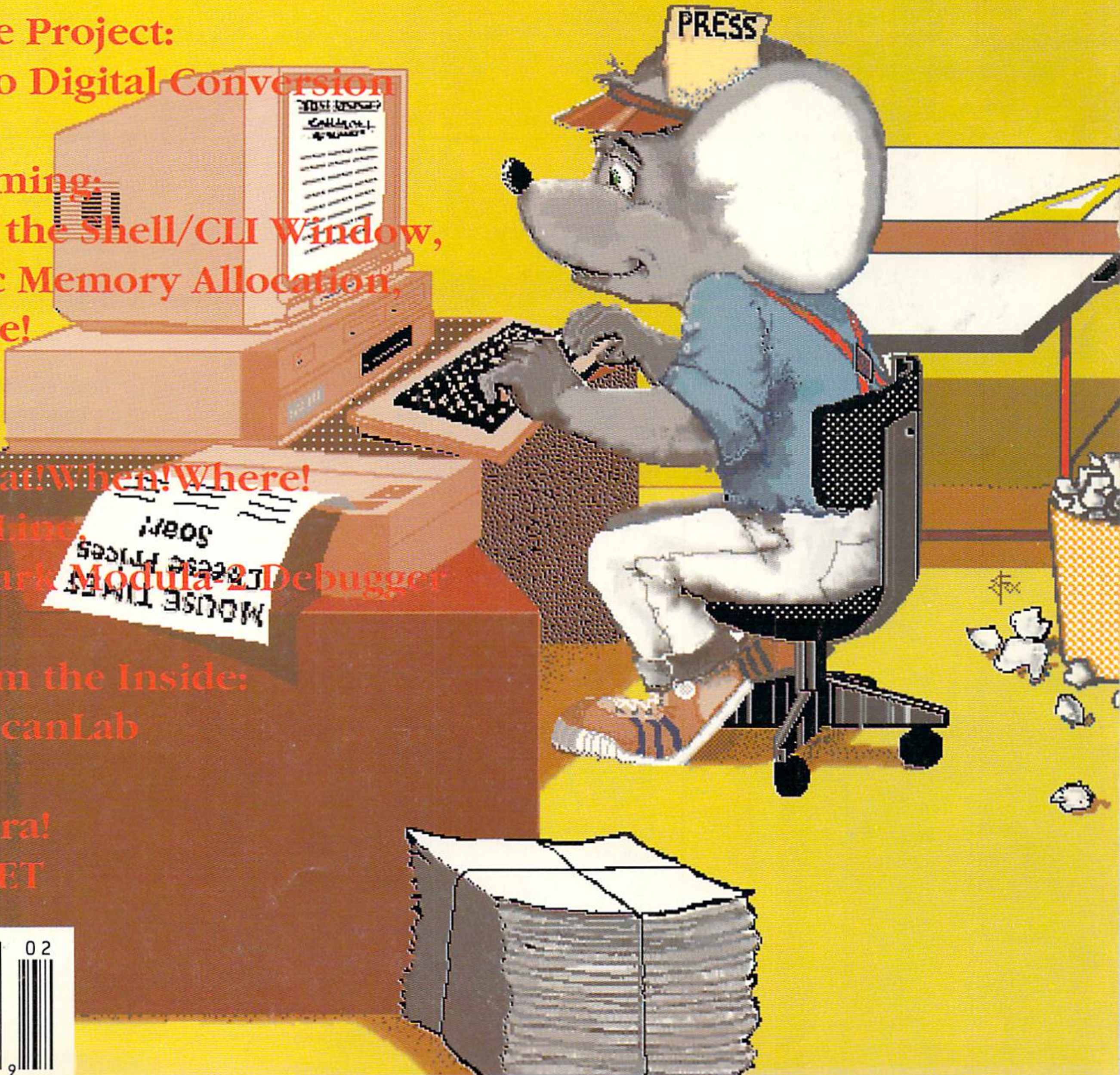
Hardware Project:
Analog to Digital Conversion

Programming:
Resizing the Shell/CLI Window,
Dynamic Memory Allocation,
and more!

Reviews:
Who!What!When!Where!
VTX On-Line,
Benchmark Modula-2 Debugger

View From the Inside:
ASDG's ScanLab

Extra!Extra!
AMIGANET



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Volume 5, Number 2
February, 1990

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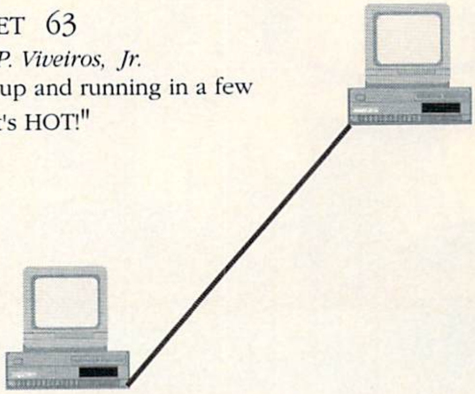

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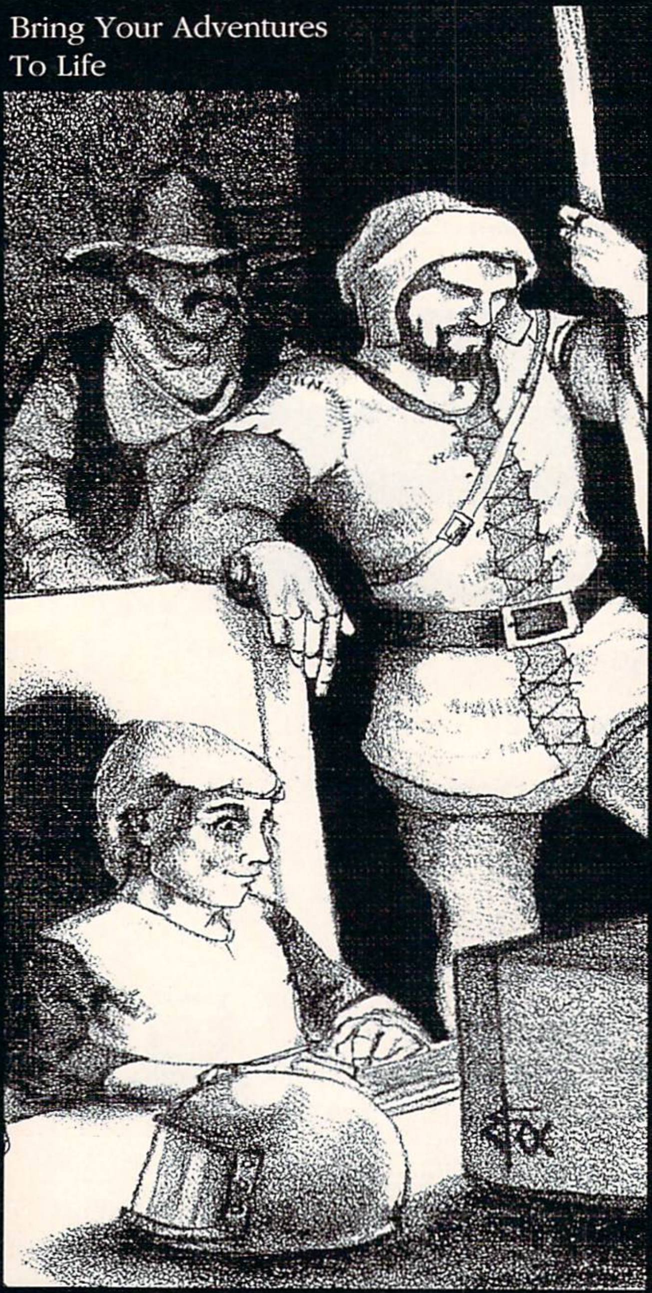

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Cryston Computer System	Midland
CVF Data Systems	Peterborough
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Data Marketing Kingston	Kingston
Desktop Computer, Inc.	Kitchener
Electronics 2001	Willowdale
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Lichtman's	Willowdale
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From The Managing Editor

NETWORKING

The other day, during a telephone conversation, Geoff Evans at Commodore Business Machines in Canada happened to tell me about a new tool he was using in the office. It seems a British-based company called Hydra Systems had developed an Ethernet system for the Amiga called AMIGANET. Geoff was extremely proud of the way the system worked and how easy it was to install.

I was immediately interested. For as long as we have been producing AC (four years now—this is our anniversary issue), we have been looking for a networking solution on the Amiga. While there were networks available, few could do the things we wanted. When we told one company what we wanted to do, they suggested we adopt their system with a Sun workstation as a file controller. We were not interested. While it might have seemed a workable solution to them, it was a dishonest solution for us.

AC maintains a policy of only utilizing software and hardware as it is shipped by the vendor. This means that we do not want a special piece of hardware which has been through more trouble-shooting procedures than an Amiga user would receive from a dealer. Nor do we want any more technical support than we would expect to receive as an Amiga user.

As a result of this policy, misunderstandings sometimes result. When a developer is wholly enthusiastic about their product, and we tend to shun the extra assistance, the vendor can misinterpret our hands-free attitude as a lack of interest. But our main goal is to supply the reader with an accurate account of what they should expect when they purchase the product.

This means that our Amigas have had to rely on the tried and true method of file serving called "the floppy". I will take this article I am typing on my Amiga 2000 and place it on a floppy. I can then throw it to a proof editor on the other side of our production area, where they in turn will place it in their Amiga for corrections. The efforts become more difficult if we want to use a printer or modem, which are connected to another Amiga. (During this issue, quite a line developed behind the editor who was printing out sheets from the Amiga onto our Varityper VT600.)

Compounding this problem is the number of Amigas we use in editorial and production. Every editor, writer, or production person has an Amiga. Up till now, these units have been maintained as separate islands of computing. There were no bridges nor lines to tie them together.

This is why we were so excited to hear of AMIGANET. On page 63, Ernest Viveiros, Jr. previews this product by installing it in two of our Amiga 2000's. While this is not a review (we only received the product at press time), it is mentioned in this issue with exuberance. I promise, you will see a full review in a later issue.

A SECOND PHONE CALL

Hours before this issue was due at press, I received a call from an Amiga user who wanted to write an article. Mrs. Lilo Blumenfeld was very excited with her success in upgrading her Amiga 1000. I was impressed with Mrs. Blumenfeld.

Mrs. Blumenfeld is a 68-year-young Amiga user who purchased her Amiga in February 1986. She uses her Amiga to create a newsletter for about 50 friends and relatives in East Germany. She writes about life in America, keeps track of special events, and acts as the news conduit for these survivors of the Holocaust.

Mrs. Blumenfeld experienced World War II from a unique perspective. She was a German citizen secretly engaged to a young Jewish man named Klaus Blumenfeld. In the build-up before the war, she wanted to attend college. In order to go, she had to spend six months at a labor

(continued on page 80)

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For The Commodore

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Advertising Manager: Jannine Irizarry
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1-508-678-4200
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SPECIAL THANKS TO:
Buddy Terrell & Byrd Press
Bob at Riverside Art, Ltd.
Swansea One Hour Photo
Pride Offset, Warwick, RI
Mach 1 Photo

Amazing Computing™ (**ISSN 0886-9480**) is published monthly by PiM Publications, Inc., Currant Road, P.O. Box 869, Fall River, MA 02722-0869.

Subscriptions in the U.S., 12 issues for **$28.00**; in Canada & Mexico surface, **$36.00**; foreign surface for **$44.00**.

Second-Class Postage paid at Fall River, MA 02722 and additional mailing offices.

POSTMASTER: Send address changes to PiM Publications Inc., P.O. Box 869, Fall River, MA 02722-0869. Printed in the U.S.A.

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Circle 138 on Reader Service card.

Feedback

Dear AC:

I need a printer driver program for an Amiga 500 and a Star Gemini 10X, 9-pin, dot-matrix printer.

I have had the printer for approximately eight years and I just acquired the Amiga four weeks ago. Although the printer works for one particular application (it prints scores from the World Class Leaderboard golf program), it does not work with the Amiga Workbench 'graphic dump' for the 'notepad'. When I asked the dealer about this problem, he suggested that I needed a printer driver and gave me an issue of *AC's Guide to the Commodore Amiga* which listed all your Fred Fish programs.

However, I was not able to locate the disk I need. As I recall, when using that printer with my former C-64 and Cardco +G interface, it emulated an Epson printer.

Your assistance in this request would be greatly appreciated.

Sincerely,
Terry L. Sassaman
Reading, PA

Well, do thank your dealer for us, Terry, they definitely had the right idea. The answer to your problem should be found on Amicus disk # 9. If your dealer does not have this available they, or you, can order it directly from us. —ED.

Dear AC:

In my humble opinion AC is THE BEST. For content, the other magazines for the Amiga don't come close. Keep up the good work; and more product reviews.

For those of you that use the B.A.D. disk optimizer (if you don't, I strongly recommend it—it's well worth the 30 some dollars) I have a simple tip. I have been using this trick on my data disks: disks with files that are used exclusively by other programs such as MaxiPlan, DPaint, etc.. If you usually open these files with the file requester from your main program, *BLITZ* these data disks using the "CLI" option instead of the "WBench" (default) option. You will find that when using the file requester for these disks after Blitzing them, the Directories, Sub-Directories, and files will fly up on the screen, and without that annoying disk thrashing.

To go one step further, if you have the NOICON option when you save the file, use it. Or, after saving the file delete the .info file. This will not only save you space on your disk but also speed up optimizing the disk. Of course, when you delete the .info files, you won't be able to open the file from Workbench. But since you normally open it within the program via the file requester, this won't matter.

For a long time I have reaped the benefits from tips provided by fellow Amigans through columns such as this. And, even though this is no earth-shattering tip, perhaps it will help to improve that quality time spent with your Amiga.

Fred Hayden Jr.
Huntersville, N.C.

Thanks for the tip, Fred! We always appreciate fellow Amigans offering their hard-earned solutions to problems. It makes life easier for all of us. Please keep up the good work—and keep sending in those tips!—ED.

Dear AC:

Just a little tip for all the Breach 2 players out there. I call it the multiple item use option. First select the item to use, I like the neutron bomb but you can use others, from the selection menu. When the new cursor appears, select the drop an item. From this menu drop the neutron bomb. You can see the item appear in your square. Now position the cursor where you want to throw the bomb. Mega death at an affordable price! Now you can pick up the bomb and reuse it. This is nice for those densely populated areas.

Tom Cafaro
Bethel Park, PA

Thanks for another great tip!—ED.

Dear AC:

In "View from the Inside: Bars and Pipes", Melissa Jordan Grey incorrectly states the Bars and Pipes is " the first object-oriented musical composition environment." This is very far from the truth. Object-oriented music languages have been around for a number of years. IRCAM's MIDI-LISP runs on the Mac. Hierarchical Music Specification Language (HMSL) has been available for the Mac and the Amiga for at least three years now. HMSL's flexible object-oriented environment is based stylistically on Small talk, and is designed to facilitate experiments in music composition, form, and real-time performance.

This is not the first time that I've seen Bars and Pipes promoted as the first object-oriented music program. It is an incorrect statement, and should be dropped from their press releases. Incidentally, I do think Bars and Pipes sounds like an interesting package.

Yours,
Nick Didkovsky
New York City, NY

We contacted Melissa Grey from Blue Ribbon Bakery for a comment. Apparently she feels that she might have left herself open for this criticism by calling Bars&Pipes an "object-oriented music environment".

(continued)

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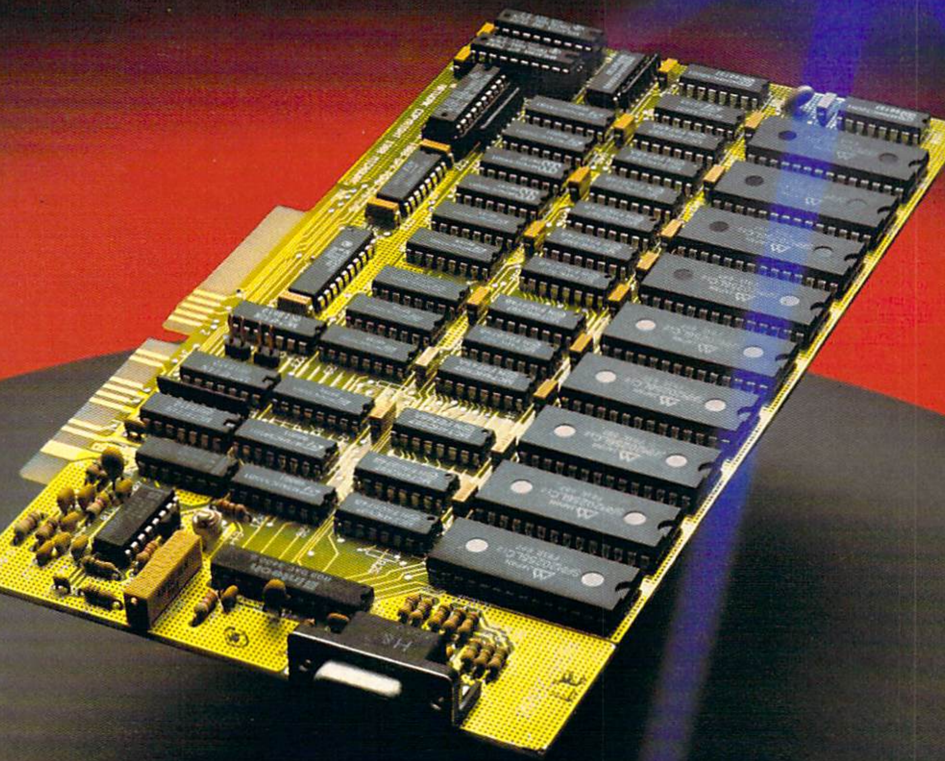

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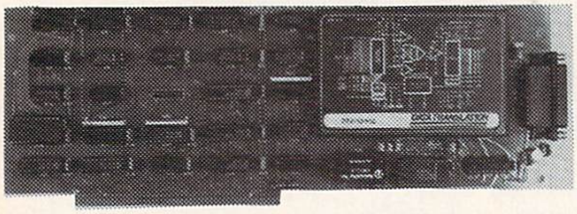
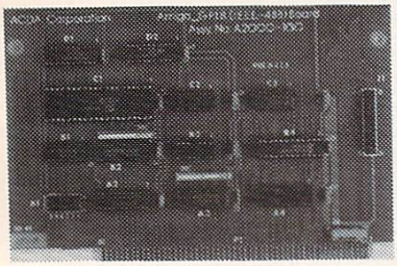
PROTO-40K



Proto-40K is the first and only fully featured data-acquisition and process-control expansion card for the Amiga 2000. The Proto-40K features a 16 channel 12-bit multiplexed analog-to-digital converter, two 8-bit digital-to-analog converters, a 3-channel programmable timebase, 16 digital inputs and 16 digital outputs. Proto-40K also features a highly stable instrumentation amplifier with programmable gain, multiple triggering sources, and on-board digital waveform generation. Data acquisition and process control projects are a snap to develop with the Proto-40K Data Acquisition System (DAS) software and 'C' source code. Sample application programs and source are included for each of the Proto-40K functions. Now sold in various custom component configurations. Buy only the functions you need. Call for new lower pricing.

Amiga GPIB



Amiga_GPIB is a General Purpose Interface Bus card for the Amiga 2000. This half-length expansion card performs all the Talker, Listener, and Controller functions of the GPIB (IEEE-488) protocol. One Amiga can control up to 14 GPIB devices. Includes Command Function Library (ACDA GPIB CFL), test application program and 'C' source code driver. $495.00

AmigaView 2.0

AmigaView is an object-oriented, C language, Intuition front-end interface library that provides over 100 easy-to-use routines and macros. Our package features WINDOWS, SCREENS, MENUS, REQUESTERS, GADGETS OF ALL TYPES (including automatic mutual exclusion), BITMAPS, ALL IMAGERY, IFF, TEXT, and much more. This standarized and consistent Intuition/Graphics interface greatly reduces programming time and code space for professional applications development. AmigaView works with both MANX and LATTICE. See AmigaWorld (Sept./Oct. 1987, p.28) for review. $79.95

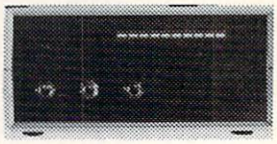
DigiScope

DigiScope is a digital storage oscilloscope emulater that works with ACDA's Proto-5K, Proto-40K or other parallel-port digitizers. DigiScope has 16 independent waveform buffers, a digital signal processing (DSP) package, a Fast Fourier Transform (FFT) package and a filtering package. DigiScope has extensive waveform scrolling functions that work in a resizeable scope window in high or low screen resolution. DigiScope offers a complete set of archival functions and the standard complement of signal statistics. DigiScope also features an extensive digital waveform generator package. $139.95

Shinko & Mitsubishi Preferences 1.3 Printer Drivers

We offer a complete line of thermal color printer drivers for the Mitsubishi and Shinko A&B size color printers. They are 100% Amiga Preferences 1.3 drivers. $133.00

PROTO-5K



Proto-5K is a single channel analog-to-digital converter with switch-selectable input gain ranges, LED input voltage meter, range-test calibration switch and daisy-chain parallel port configuration. Proto-5K is available for all Amigas and comes with test, utility and data-acquisition system software source code in C. ACDA Digiscope demo included. $279.95

Amiga_FFT C Package

The Amiga_FFT C Package Provides all the source you need to perform detailed frequency analysis utilizing a complete set of Fast Fourier Transform (FFT) routines. The package includes C source for derivation of the Power-Spectrum, Phase-Amplitude Spectrum, Inverse FFT, several window functions and user interface functions. $152.00

ACDA Corporation
220 Belle Meade Avenue
Setauket, NY 11733
(516) 689-7722

Circle 104 on Reader Service card.

Additionally Melissa says, "Thank you for bringing HMSL to our attention. HMSL is indeed the Amiga's first object-oriented music language. *Bars&Pipes, on the other hand, is an object-oriented music* application *[program]. Blue Ribbon Bakery is the first to bring this concept to all Amiga end-users; not just Amiga programmers. By the way, as a result of your letter, we're already on our way to making Bars&Pipes communicate with HMSL. Thank you!"*

It seems to us, Nick, that the distinction here is one of semantics, not intent. There are many people who can produce graphics on the Amiga by programming, but with DeluxePaint (for example) anyone can paint a picture. By the way, for any of you readers who have been trying to contact BRB for more information, we wish to apologize again for printing the wrong phone number. the correct numbers are:

Tech. Support: (404) 377-BARS
Main Office: (404) 377-1514

—ED.

Dear AC:

I am one of the many Amiga 500 owners who bought their machines after Commodore started shipping the 1 meg Agnus chip with the A500. This, however, is not the blessing I first thought. I have come to find that even though I have 1 meg installed, the A500 is set at the factory for 512K of RAM and requires some internal modifications before the 1 Meg will be recognized as chip RAM. Like many AC readers I have enjoyed your hardware articles in the past and would like to make the modification myself. Will AC be publishing such an article in the near future?

Sincerely,
Victor LoPresto
Ft. Worth, TX

To tell the truth, Victor, we've been plagued with questions about the A500 and the new Fat (Fatter) (Obese?) Agnus. Even our own Bandito is confused (see this month's Roomers column). We had even been told by several knowledgeable (we assumed) sources that the new chip will not work in the 500's at all. Here's the official word from Commodore: Apparently, even after the introduction of the new Agnus, Commodore continued to put the older version in the A500's until supplies ran out. They say that units currently being shipped (as well as all of those shipped since sometime before Thanksgiving) now include the new chip. They were not able to give us any information regarding lot or serial numbers to help identify your particular machine. You must still contact either your dealer or Commodore if you are unsure as to whether or not you do have the new Agnus chip. If you do *have the new Agnus you will still need to move one jumper on the motherboard. This is a simple change to make and, although Commodore still recommends that you have your dealer do it, your dealer may just tell you which one to move. There is, however, one more small fly in the ointment. It seems that this new Agnus will work with Commodore memory expansion units as well as with* most *third-party units but, apparently, there are a few it will not work with. Commodore would not provide us with names, but they claim this is another case of some developers taking shortcuts or otherwise not adhering to all of the rules. If you're about to make the plunge into 500 memory, you may want to get assurances from your dealer or the supplier that the particular memory you are contemplating will work with the chip. —ED.*

•AC•

New Products and Other Neat Stuff

by Elizabeth G. Fedorzyn

THE END OF WORLD AS WE KNOW IT

New from Synthetic Reality Software comes World 3D, an interactive graphic editor for use with the shareware DBW_Render raytracer.

Written by Nathan Stone, World 3D provides speed in designing, editing, and previewing scenes for DBW_Render. Among its many features, World 3D allows you to save and create individual objects and construcy a library of commonly used shapes, easily edit attributes as well as textures and global parameters, and load and use VideoScape and Sculpt-3D objects. The Synthetic Reality program also sports ultra-fast Preview mode, compact code, editing via "ghosting", as well as object duplication and true 3D solid object support.

As demonstrated here, the results can be quite impressive. The included shot was created using World 3D and importing the lettering from Sculpt-3D, with the marble texturing being added afterwards. The image was calculated on the Amiga at 1024 x 1024 pixels.

World 3D runs on any Amiga and requires 1 Meg RAM. The program is compatible with DBW_Render, versions 1.0 and 2.x (the shareware program is included with the package), and sports a friendly "point and click" interface.

World 3D
Synthetic Reality Software
P.O. Box 6066
St. Cloud, MN 56302
(612) 259-9499
Price: $95.00
($65.00 for registered DBW_Render users)
Inquiry #210

PLEASE DON'T TOUCH THE MONITORS

Commodore announced it has become a participating sponsor of "Tech 2000", the world's first interactive multimedia gallery located near the Washington Convention Center ar Techworld Plaza in Washington, D.C.

Tech 2000, which opened to the public last month, features the most advanced applications and demonstrations of interactive multimedia. The gallery, which was developed by Techworld Plaza and the Interactive Video Industry Association (IVIA), is expected to draw more than one million visitors annually.

According to Commodore's Director of Business Markets David Archambault, 10 Amiga computers form an integral part of the exhibit. The Amigas, which operate interactive kiosks directing visitors through the exhibit, help make Tech 2000 "user accessible". But do they do tours?

Commodore Business Machines, Inc.
1200 Wilson Drive
West Chester, PA 19380
(215) 431-9100
Inquiry #213

Image created with Synthetic Reality's World 3D.

LOOK OUT, JOSEY!

Well, all you plumbers or would-be plumbers out there, it's time to take a swig of Drano and grab a fat roll of duct tape. Originally created by John Dale and Martin Day in Bristol, England, **Pipe Dream: The Fast-Flowing Game of Skill, Strategy,**

and Plumbing is now being released as a result of a collaboration between the British designers and Lucasfilm Games.

In Pipe Dream, your objective is to construct the longest possible continuous pipeline by piecing together various shapes of pipes that appear in random order — you know, just like a real $35.00/hour plumber. All the while, you are racing against a stream of oozing chemical fluid of dubious origin called "flooz".

In a slow-motion training period, you learn the skills necessary to face the flooz. But it may take a considerable apprenticeship for you to advance through the 36 increasingly difficult levels. While Pipe Dream may begin on a basic training field-with seven basic pipe shapes, the game advances to more challenging levels filled with one-way pipes, obstacles, and faster-flowing flooz. Bonus rounds appear after players complete four levels.

Pipe Dream allows more than one plumber to try their wrenching skills at one time. Two players can play against each other, or join forces in a joint battle against the flooz.

The Lucasfilm release also features a top ten high score table, and may be controlled using the keyboard, the joystick, or the mouse. A minimum 512K memory is required.

Pipe Dream
Lucasfilm, Ltd.
P.O. Box 2009
San Rafael, CA 94912
(415) 662-1966
Price: $39.95
Inquiry #211

SHOCK THE MONITOR

Ever feel as though you might be on the verge of slipping into a computer-beige coma, what with the ever-extensive selection of designer colors available for computer products (mainly beige or black.) Beeshu, Inc. may have just the treatment. Their new joysticks are sure to jolt anyone out of a state of computer ennui.

Beeshu's **Hot Stuff** joysticks feature 2 trigger buttons mounted on the joystick handle, along with a second set of fire buttons located on the base. The joysticks also sport an auto-fire switch.

Of course, the most striking of Hot Stuff's features (aside from their *very* low price) are their rather intense, altogether refreshing colors. From a brilliant blue to an arresting yellow, a lime green, and a very shocking pink, never again will you need to ask, "Gee, where's that joystick?" These things are what road flares are made of.

Also available from Beeshu are the **Zoomer** and the **Ultimate Superstick**. The Zoomer is a console-type controller designed for use in cycle and car-racing games, air-combat games, etc. Two auto-fire buttons are included, and fire buttons are built right into the handle for that truly vicarious experience. Scarf and a goggles not included.

With the Ultimate Superstick, you can have that true arcade feel. This Beeshu arcade-style controller features 8 directional microswitch controls and 2 independent dial-a-speed auto fires, allowing for as many as 30 shots/second. The Ultimate Superstick also comes with 2 sets of fire/jump buttons — each with its own LED. Just like the arcade; all you need now is a Whitesnake T-shirt-clad adolescent breathing down your back.

Both the Zoomer and the Ultimate Superstick come equipped with a ten-foot cord and super strong suction feet.

Beeshu, Inc.
101 Wilton Avenue
Middlesex, NJ 08846
(201) 968-6868
Hot Stuff: $10.99
Zoomer: $49.95
Ultimate Superstick: $39.95
Inquiry #212

Directing "flooz": Lucasfilm Games' Pipe Dream.

Cool tools: Hot Stuff and Zoomer from Beeshu, Inc.

DELUXEVIDEO III

Thanks to Electronic Arts, video addicts may never need to switch on network TV again for their Recommended Daily Allowance of video. With the release of **DeluxeVideo III**, videophiles around the globe may now retreat to the depths of their makeshift studios never to be heard from again.

DeluxeVideo III offers professional video power with a simple "point and click" intuitive interface. As designer Mike Posehn noted, "DeluxeVideo III provides complete control over the Amiga's graphics, animations, and sounds...The amount of power it provides is stunning."

Indeed, DeluxeVideo III supports all Amiga resolution modes, super bitmaps, high-speed animation, MIDI output, IFF standard sound and music files. DeluxeVideo III is also the only program providing full DPaint III capability, allowing you to use anims or anim brushes created in DPaint and combine them with pictures, digitized sound effects, or music to create impressive audio-visual presentations.

DeluxeVideo III supports object-oriented interactivity for HyperCard-like flexibility. The program controls external devices such as MIDI equipment for high-quality music, genlocks such as SuperGen for overlaying computer graphics, and single-frame VCR's for pro-quality animations.

The Electronic Arts program includes several utility programs, such as Instant Slide Show which lets you create picture presentations quickly, and a freely redistributable Player program that lets anyone with an Amiga play back the videos you've created with DeluxeVideo III.

DeluxeVideo III works with any Amiga with 1 Meg RAM or more, and requires 2 disk drives. A hard disk is recommended. Upgrades are available for DeluxeVideo owners. Contact Electronic Arts for details.

DeluxeVideo III
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
Price: $149.95
Inquiry #214

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ZeroVirus III is Jonathan Potter's latest virus detection program. The first two versions Jonathan released into the public domain. His latest version is a commercial release and is being produced by Micro Momentum, Inc.

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You can also use ZeroVirus to check a single directory, or a whole disk for any known file viruses. Using the file catalogue option, you can catalogue a directory or disk of files, and check for changes in them later on. Inexplicable changes can indicate a file virus.

ZeroVirus uses brainfiles, to make updating easier. The brainfiles contain information that ZeroVirus uses to identify viruses and other non-standard bootblocks. ZeroVirus has a learn option, whereby you may include in the brainfile the data necessary to recognize a certain bootblock in the future. ZeroVirus also has "online" brainfile editing, to make the procedure even easier.

ZeroVirus can be iconified to a small window on the Workbench screen, where it runs in the background, checking every disk you insert in the drives. Free brain file updates will be made available from the public domain.

Micro Momentum, Inc.
P.O. Box 372
Washington Depot, CT 06794
Orders (800) 448-7421
Price: $39.95
Inquiry #215

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OTHER PRODUCTS RECEIVED

Amiga Hardware Reference Manual
Addison-Wesley Publishing
Route 128
Reading, MA 01867
(617) 944-3700
Price: $24.94
Inquiry #216

Hotel Detective and Space Knight
The Euroline Group
1244 N. Orange Drive
Suite 206
Hollywood, CA 90038
(213) 462-5013
Price: $29.95
Inquiry #217

Indiana Jones: The Action Game
Lucasfilm, Ltd.
P.O. Box 2009
San Rafael, CA 94912
(415) 662-1966
Price: $39.95
Inquiry #218

Pixelations PostScript Series
Pixelations, Inc.
P.O. Box 547
Northboro, MA 01532
(508) 393-7866
Inquiry #219

PSFont
Progressive Distributors
4 Caithness Avenue
Toronto, Ontario
Canada M4J 3X7
(416) 466-6450
Price: $129.95
Inquiry #221

Scene Generator
Natural Graphics
P.O. Box 1963
Rocklin, CA 95677
(916) 624-1436
Price: $39.95
Inquiry #222

SideShow
Actionware Corp.
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Batavia, IL 60510
(708) 879-8998
Price: $44.95
Inquiry #223

Software From Hell
Conceptually Advanced Technologies
P.O. Box 3302
Santa Monica, CA
(213) 452-1732
Price: $69.95
Inquiry #224

Space Ace
ReadySoft, Inc.
30 Wertheim Court, Unit 2
Richmond Hill
Ontario, Canada L4B 1B9
(416) 731-4175
Price: $
Inquiry #225

Stik-Gripper
Duggan DeZign, Inc.
16 Oak Ridge Drive
West Warwick, RI 02893
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Price: $18.95
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Comdex Fall '89

by Ed Bercovitz

Las Vegas has got to be the perfect site for the Fall Comdex. The similarity is really striking between the atmosphere at the show and outside in the various casinos around town. Both use glitter, glitz and sizzle to grab the attention of people passing by. Both offer entertainment, food and refreshments as an adjunct to their main business activities. Finally both offer the potential for realizing big winnings. For Comdex exhibitors a hit hardware or software product can result in sales and profits in the millions of dollars. For attendees time invested in listening to a sales spiel or watching a demo can payoff in a promotional giveaway ranging from a $50 software package to a complete system valued in five figures.

This year's gathering of the computer industry was held from November 12th to 17th and was a record breaking event. Nearly 1800 vendors hosted approximately 120,000 attendees with over 21 miles of aisles of exhibits in almost a million square feet of floor space in 10 sites.

It is a bit of a misnomer however, calling this an industry event. Comdex has evolved into a show primarily oriented towards personal computer hardware, software, peripherals and accessories. More specifically Comdex is largely targeted towards the IBM PC and compatible community. Among these shades of blue, a Comdex attendee will find islands of vibrant and innovative colors, but they are usually few and far between.

ON THE SCENE

Center ring at Comdex is located in the North and South Halls of the Las Vegas Convention Center. Here is where you will find the industry's "household" names like IBM, Apple, Intel, Microsoft, Lotus, Toshiba, NEC etc. However for an Amiga dealer, distributor or end user the place to begin the show tour is obviously at the Commodore exhibit.

Unfortunately, the booth was not an impressive site. First of all it was located in the East Lobby, adjacent to the main show hall. There was only one other exhibit in the area (Tektronix), and hence it was not well sited to catch the interest of passersby. Even worse it was located down some stairs away from the main traffic route through the lobby, so a conscious effort and a change of direction was required to enter the display.

The booth itself was a much scaled down version of the booth that had been used in Chicago at last spring's Comdex. Commodore continued the theme of focusing on the Amiga's niche markets by setting up a warren of workstation booths dealing with desktop video, publishing, music and business applications (with the latter the area being shared between an Amiga and a Commodore PC). Along the top front of the booth were five monitors simultaneously showing a video on the Amiga's capabilities and first person interviews with various Amiga users recounting how they used the Amiga.

COMMODORE GOLD

While the exterior may have been less than inspiring, there were a few treasures inside the exhibit in the form of new products from Commodore. The major announcement was a new member of the Amiga family–no not the proverbial Amiga 3000 whose appearance at Comdex had been rumored for weeks before the show. The Amiga 2500/30 is not really a new model but rather a variation on a theme. Like the 2500 the 2500/30 is basically a stock 2000 with an additional CPU in the form of a card for the co-processor slot. The 2630 Accelerator Board consists of 25 Mhz. 68030 and 68882 math processors as well as an integrated memory management unit with a standard 2 megs of 100 nanosecond 32 bit RAM and space for an additional 2 megs of ram. Suggested list prices are $2195 for the 2630 and $4699 for the Amiga 2500/30.

Sharp-eyed readers will note that the list price for the 2500/30 is the same as that of the old 2500. Concurrent with the release of the 2500/30 Commodore announced a series of price reductions ranging from 10 to 15% for the Amiga 2000 ($2195/$1895), 2500HD ($2999/$2699), 2500/20 ($4699/ $3999) and the 2620 Accelerator card ($1995/$1495).

Other new product announcements included the A2232, a seven port serial card ($399 suggested list) and the 2091-40, a 19 ms. 3.5 inch 40 meg hard card with socketed space onboard for 2 megs of 16 bit Ram ($899). The A2232 uses 8 pin connectors connecting to industry standard DB-25 serial cables which are provided with the unit. With onboard ram and a dedicated microprocessor the A2232 can operate all seven ports simultaneously at 19.2 kilobaud and multiple A2232 can be installed in an Amiga 2000. While the rated throughput is too slow to support Midi-devices, the spec sheet supplied by Commodore says it can be used to connect serial devices such as terminals (presumably for the Amiga Unix system), laser disc players (it has been rumored that a CD-Rom player is in the works with current speculation being that it will be released in 1990), and touch screen systems (a new marketing niche perhaps?).

The A2091-40 is based on the 2090A autobooting technology and is basically the Amiga 500's A590 turned into a card for the 2000. In addition to being sold with a hard drive, it will also be sold in a controller/ unpopulated memory version as the A2091 with a suggested price of $399.

All of the above products were due to start shipping immediately after Comdex. The price reductions were also scheduled to take effect immediately with Commodore offering dealers price protection on existing inventories. Hopefully this strategy will help move a lot of systems and peripherals and help Commodore reverse the losses of the two most recent fiscal quarters.

Conspicuous by their absence were several products which had been shown publicly at previous shows in the form of "technology previews". I was told that this was due to a new policy of not showing any products until they were ready to ship. There were several other new wares that were so close to being ready that the spec sheets were actually brought to Comdex, but at the last minute a decision was made not to announce them. Furthermore in the future product announcements would be grouped together and made on a worldwide basis, rather than being released in dribs and drabs. So 1990 looks to be an interesting year with various unveilings taking place on roughly a quarterly basis.

In spite of the above, I was able to get a verbal update on a number of items. The Hedley high resolution monochrome monitor is now shipping in Europe and, with FCC certification almost completed, will be available in the US "real soon". The Novell hardware, first shown at last spring's Comdex, is finished but the software is still being worked on by Oxxi under contract to Commodore. The Amiga Unix software will be based on AT&T's System V Release 4 and will be sold bundled with a 68030 Amiga. In fact it had been demoed on the A2500/30 at a Unix Expo in New York a couple of weeks prior to Comdex. The fact that Commodore is one of the first manufacturer's showing a operating version of Release 4 should get Commodore off to a quick and hopefully successful start in the Unix market. The actual release date will be dependent on AT&T's "official" delivery of Release 4, which is expected by the end of the first quarter of 1990.

The timing of the unveiling of the Unix system is interesting in that it may very well be coincident with the announcement of the mythical Amiga 3000. Not much publicly was being said about the latter. Given Commodore's past track record my guess is that the official unveiling will take place at Cebit in Germany in March.

ON THE SIDE

Not all the action at Comdex takes place on the exhibit floor. Throughout the five days of the show there is a very extensive series of plenary sessions, seminars and panel discussions on various aspects of industry. Traditionally Commodore has been included in at least one of these presentations. During Spring Comdex in 1988 they were matched against Atari in a seminar on "Alternative Niche Markets". For the last few Comdexes they have been included, along with Apple, in seminars on various facets of multimedia, and at this show they were joined by IBM in a discussion on "Multimedia Computing and Presentations".

Multimedia is becoming one of the hot new themes in the personal computer industry especially since companies like IBM, Microsoft and Intel have started embracing it as a "wave of the future". There is increasing interest in the multimedia concept of integrating video, animation, graphics and sound as evidenced by the fact that attendance at the above seminar had grown several-fold to over 500 people as compared to the same seminar at the Spring Comdex. Unfortunately Commodore's performance in the seminar was, at least in my opinion, second to that of Apple, who had a very polished and varied presentation. Apple mentioned and demonstrated various multimedia hardware and software products (including ironically Sculpt 3D) and gave concrete examples of how Mac multimedia was being used in major US corporations. Dave Archambault from Commodore concentrated on the Amiga's technical specifications and cost benefits. It was the classic confrontation between high price but available and useable products versus great potential and low price but more limitations as far as current usability.

> ***The Compugraphic rep gave me a press release announcing the licensing agreement for incorporating Intellifont into Workbench. This was rather exciting news, since it will give the Amiga state-of-the-art high speed and high quality screen and printer type intergrated at the operating system level.***

THE GOODS

Leaving the Commodore booth, I headed out to see the rest of the show and to try and uncover news and information that might be of interest to Amiga owners. Not too far away in the Main Hall in the Sharp booth I discovered a 2000 being operated by ASDG in their demonstration of their new Scanlab 100. This is their latest addition to their line of colour scanners and software, but at a list price $995 it is much more affordable to the average user. The Scanlab 100 is based on the Sharp JX-100 hand scanner. Unlike other hand scanner's this one doesn't require you to move the scanner over the document. You simply lay the hard copy on your desk and place the 4.5 pound, 6.5" by 12.5" and 1.5" scanner on top of it. There is a 3.9" by 6.3" window on the top of the scanner which lets you view the area you are scanning to ensure that it is aligned correctly. A scan at its maximum resolution 200 dots per inch will take 40 seconds for black and white and 150 seconds for full colour. Although the software can handle full 24 bitplane or 16 million colour images, the hardware colour resolution is limited to 18 bitplanes or 256,000 colours. Due to the Amiga's video limitations not all the colours are displayable onscreen. ASDG has developed a new screen format which they are calling ARes and which uses 4096 colours on a high resolution screen. Formats with the same capabilities have been developed recently in the publicdomain (SHAM or sliced HAM) and by Newtek for Digiview 4.0. Although all these formats have the same colour/ resolution specifications, the image files are not interchangeable between applications. ASDG is interested in seeing a new standard emerge which could be universally supported.

A bit further over in the Main Hall Michtron was showing their new 9600 baud Group III external fax modem and software. It was scheduled to go on sale by mid-December at a suggested list price of $595. This is a fully multitasking system

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allowing background receiving or transmission according to a user defined scheduled log. To prepare a document for faxing you simply print it to disk using the Epson printer driver. Received faxes are viewable in various magnifications on an interlaced screen using a zoom feature. The received fax is stored in a proprietary format, but they are developing a program that will convert them to IFF format. What really impressed me was the ability to take any IFF standard image or brush created in a paint program and merge it with standard text from an ordinary word processor for transmission, so as to give the appearance of a document printed on a letterhead. Undoubtedly there will be similar products appearing from other vendors, but Michtron has produced a very impressive product at a reasonable price as the first entry in the Amiga fax market.

TOUCHY SUBJECT

Also on display in Michtron's booth was an interactive video display system from Future Touch. These are Amiga based systems housed in a "kiosk" measuring approximately 2 feet by 2 feet by 4 feet high using a touch screen for user input. Typical uses for such systems are for public information booths, directories and product catalogs, point of sale terminals, computer based training, executive information workstations etc. Various configurations are available ranging from a budget system based on an Amiga 500 with 20 meg hard disk right up to a deluxe system which uses an Amiga 2000HD, Neriki genlock, Microway Flicker Fixer, Pioneer Laser disk, expanded ram, stereo amplifier and multiple comm ports! Prices for complete systems range from $4600 to $12,500. Future Touch also offers prefitted 13 and 19 inch monitors with touchscreen capabilities for $1100 and $3400 as well as a $800 hardware and software retrofitting kit for existing monitors. This type of hardware platform is an ideal solution for using an interactive application like those developed with Michtron's Viva video authoring system.

Later getting back into the mainstream of the show I dropped in at the Agfa- Compugraphic booth to discuss the use of their fonts in the recently released Professional Page 1.3. I also wanted to check out the rumour that I had heard that the scaleable font system for AmigaDos that Commodore announced at the Developers' Conference in June was in fact the Compugraphic Intellifont technology. The Compugraphic representative was quite open on this subject and even gave me a press release announcing the licensing agreement for incorporating Intellifont into Workbench. This was rather exciting news since it will give the Amiga state-of-the-art high speed and high quality screen and printer type (for both dot matrix and laser printers) integrated at the operating system level. Current progress on incorporating the Intellifont system in AmigaDos 1.4 is proceeding smoothly, and if the latter is released in early spring as is speculated, the Amiga will be the first major personal computer system to have a fully integrated scaleable font system. Support will be provided for the standard set of 35 typefaces found in most Postscript printers (possibly as a bundle included with AmigaDos 1.4; although a decision has not been made on this as yet). Approximately 100 additional typefaces will be made available for separate purchase at about the same time as the release of 1.4, and Compugraphic will continue working at porting over many of the additional 1700 typefaces available in their font library. Hewlett-Packard has also announced that they will include Intellifont support into their printer controllers for Level 5 of PCL (Printer Control Language) in the next generation of heir laser printers. Compugraphic has also decided to make Gold Disk the exclusive distribution channel for the sale of Amiga Intellifonts for at least the initial year after release.

I decided to drop in on a couple of companies whose hardware products had impressed me during last spring's Comdex. Zoom Telephonics has a product which they call the "Zoom EX Voice/Data Telephone Network Interface". In spite of its less than catchy name this external, dual phone line, modem like external device does almost everything but make toast. Tech specs include an 8 bit CPU, onboard ram and eproms, digital to analog converters (and vice versa), internal 2400 baud modem and jacks for headsets, speakers, audio I/O, digital I/O, parallel port as well as the standard RJ-11 and RS-232 connections. It can be used as a voice mail system, a call forwarding device, a personal PBX, an automatic modem/fax/voice line switcher, incoming and outgoing call logging and recording device and a telemarketing system. It also has its own C like command language which can produce compiled programs for loading into onboard ram or eproms for additional user customization. I thought a Zoom EX with the Amiga's multitasking, speech synthesis and sound capabilities would make a powerful combination. Apparently so did a number of Amiga software vendors who have contacted Zoom and are working with them on various Amiga products at a very reasonable price given Zoom's pricing of $300 or less to value added resellers. Look for some interesting product announcements in the near future.

Advanced Gravis had an Amiga in their booth demonstrating their high quality programmable Mousestick. With a 1200 line resolution it functions as both a replacement mouse as well as a digital joystick. They were also showing their new Hardpac line of self-contained external SCSI harddrives. The 2 pound Hardpacs are about the size of a paperback book, and are available in 20, 30, 40, 80 and 105 meg formats with a data transfer rate of 19 msec. and a 64K programmable disk cache. With an injection molded casing and, special shock mountings and automatic head parking, these drives are designed to be very portable.

Another company that was showing off an alternative input device for the Amiga was Marconi which was featuring their three button trackball which they are calling the Marcus. It has been a very popular in Europe and is now being distributed in the U.S. through Southern Technology and MicroPace at a suggested list price of $87. Besides producing external, standalone trackballs, Marconi also makes a trackball module which is designed to be incorporated into keyboards. While I was in their booth, the Marconi representative mentioned that Commodore had purchased a number of these keyboard trackball modules. I don't know what type of prototypes

Commodore's R & D engineer's are developing, but this little piece of news is certainly food for the imagination.

AMIGA APPROVED

While a lot of the new hardware being shown at Comdex consists of MS-Dos compatibles and accessories, there is also a fair amount of "generic" products that are of interest to Amiga owners in particular. A number of companies including Hitachi, NEC and Panasonic were showing new colour postscript and video printers. Based on laser and thermal ink technology these machines can produce a huge palette of vibrant colours. While prices are decreasing, they are still expensive at approximately $10,000. However the obvious industry interest in the area of colour output devices means we should see some interesting developments in this area over the next two years.

Video is also starting to catch on in the MS-Dos world with a number of companies showing genlocks and still frame digitizers. Prices are still high as compared to equivalent Amiga products, but this situation will change with Microsoft, Intel and IBM promoting interactive video as the new frontier for computing in the 1990s. At Comdex there were demonstrations of add-on boards with the capability of taking a video signal and digitzing it in real time in a 256 colour, resizeable and movable window. A single frame can be grabbed with a click of the mouse and automatically copied to the Microsoft Windows clipboard for pasting into another application. While they are priced at almost the cost of an Amiga 2000 with a hard disk, they are available; there is nothing currently shipping or even announced for the Amiga that matches these capabilities or ease of use, in spite of the Amiga's supposed lead in computer video.

NEW TRENDS

Mass storage is another sector where a lot of innovations seemed to be taking place. CD-ROM may finally take off after an announcement by Headstart Computers (formerly called Vendex but renamed after it was bought by Philips) of a new line of MS-DOS computers which come with CD-ROM drives as standard equipment. That it itself was not significant, but the fact that the base model includes a 40 meg hard disk, VGA colour, stereo sound, headphones, plus a mouse as well as half a dozen bundled CD-ROMs filled with applications such as Grolier's Encyclopedia, Microsoft Bookshelf, wordprocessor, spreadsheet, database, desktop publishing, VGA paint programs, commercial hard disk and operating system utilities and 30 games from companies such as Timeworks, Electronic Arts, Mindscape and Ashton- Tate...with the complete bundle of hardware and software having a SUGGESTED retail price of under $2000! These systems could provide some serious competition for the Amiga in the battle for the home computer market. If Commodore does release their rumoured CD-ROM drive they would be well advised to emulate Headstart initiatives and to form a mutually beneficial alliance with some Amiga software publishers to help build the CD-ROM software base.

Optical media is slowly starting to make inroads into mainstream mass storage. ICI was featuring prototypes of new systems based on digital paper. This technology uses the same principles as traditional rigid opto-magnetic disks but instead uses a flexible recording medium to give storage capacities of up to 2.2 terabytes on a tape or 500 megabytes on a disk (the latter system is currently being developed by Bernoulli). The medium is "write once" but it is priced at an inexpensive enough a level that it can be used like paper.....hence the name "digital paper". XYXIS was one of the newer companies showing an erasable optical drive. Although their current SCSI-based models are designed for the IBM and Mac markets, I found out that they are working, in partnership with Impulse Ltd., on a erasable optical for the Amiga market. Their other equivalent models are priced at $4998, which is not cheap, but if you're looking for a drive with a replaceable 600 meg storage capacity and a 60 millisecond access time, then XYXIS may have a solution for you.

For Amiga owners with more ordinary sized wallets, several companies were showing floptical drives which should be going on the market in the first half of 1990. These look like ordinary 3.5 inch drives and they are can use normal 3.5 inch disks. However they can additionally read specially pre-formatted disks which have guidance tracks burned by lasers onto the disk surface. These guidance tracks provide very precise disk head positioning thereby allowing each track to be much narrower and hence more tracks to be recorded on the disk, so that storage capacities of 20 to 50 megs can be achieved. Since they use a SCSI interface,

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they should be relatively easy to incorporate into the Amiga. According to Insite Systems, one of the major manufacturers of these drives, suggested retail prices should be about $600 for the drive and $10 to $15 per disk. Syquest was also showing some new removable hard disk subsystems with a new 3.5 form factor 42 meg model and a whopping 175 meg 5.25 inch model. Both these substems are only 1 inch high and feature an access time of 19 milliseconds. They are due to ship in the second quarter of 1990 with pricing being very competitve with their current removable sub-systems.

FUN & GAMES

While Comdex is a very business oriented tradeshow a number of game companies are on hand to show off their new and planned titles. For the Amiga gameplayer the pickings were pretty slim. Microprose/Medalist was featuring X-Men: Madness in Murderworld, RVG Honda (Formula One motorcycle racing), Stunt Track Racer, Rick Dangerous, Weird Dreams, Xenophobe and Pirates (mid-1990). Microdeal newest release is Bermuda Project! an adventure game set in the Triangle of the same name. Capcom USA new product lineup included Pocket Rockets (another motorcycle racing simulation), Forgotten Worlds, Street Fighter, Tiger Road and 1943-Battle of Midway (2nd quarter 1990). Taito was announcing a couple of aerial action games, Skyshark and P-40: Tiger Shark for December releases with Chase HQ, Operation Thunderbolt and the European game hit, the New Zealand Story all being scheduled for the first half of 1990.

One sign of the success of the Amiga is when Far Eastern companies start producing peripherals specifically aimed at the Amiga market. Two Hong Kong companies, Asia Commercial Co. and Roctec Electronics Ltd. (marketed in the U.S. under the California Access label) were at Comdex showing off their Amiga 3.5 and 5.25 inch floppy drives. Roctec also announced a new A501 memory expansion clone as well as a 360k/880K 40/80 track 5.25 inch Amiga floppy drive.

Well that about wraps up the news from Comdex. While there were items of interest for Amiga owners, there were no major announcements as many people had expected. Commodore's profile at the show was very low to the extent that it was questionable whether the benefits gained were worth the costs of attending. In their defence it should be noted that there have been major changes at Commodore over the last six months which undoubtedly affected their ability to put on a better showing. Hopefully however their performance at future Comdexes will be more impressive from the perspective of the Amiga dealer/developer and user communities as well as within the context of the personal computer industry.

•AC•

Companies Mentioned

Advanced Gravis
10900 N.E. 4th St. Suite 617
Bellevue, WA 98004
206-637-2825
Inquiry #231

Agfa Compugraphic
90 Industrial Way
Wilmington, MA 01887
1-800-873-FONT
Inquiry #232

ASDG
925 Stewart St.
Madison, WI 53713
608-273-6585
Inquiry #233

California Access
780 Montague Expressway
#403
San Jose, CA 95131
(408) 435-1445
Inquiry #234

Capcom U.S.A.
3303 Scott Blvd.
Santa Clara, CA 95054
408-727-0400
Inquiry #235

Future Touch
192 Laurel Road
E. Northport, NY 11731
516-757-7334
Inquiry #236

Marconi
3800 N. Wilke Suite 381
Arlington Heights, IL 60004
708-818-8111
Inquiry #237

Michtron/Microdeal
576 Telegraph
Pontiac, MI 48053
313-334-8729
Inquiry #238

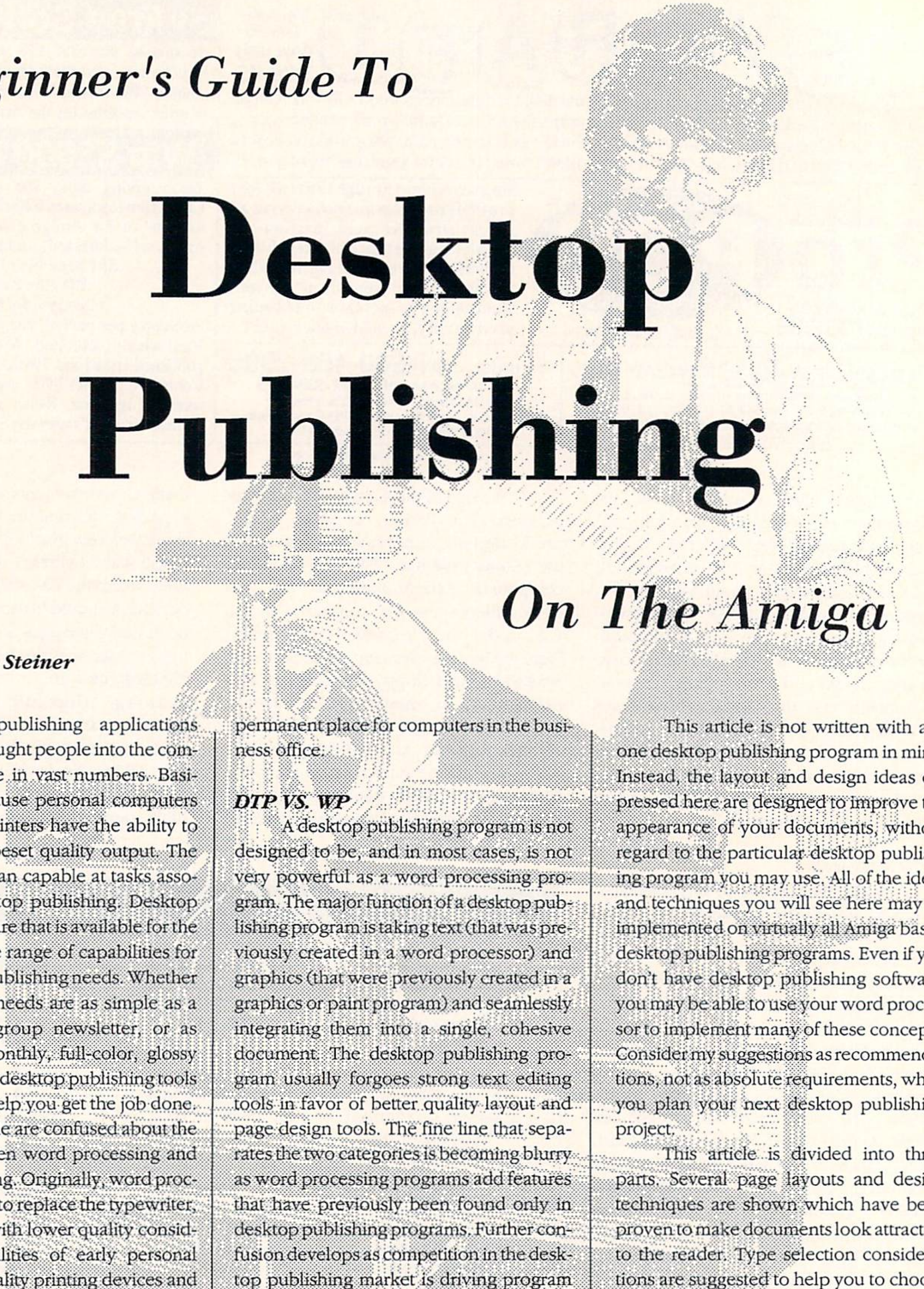
MicroProse/Medalist
180 Lakefront Dr.
Hunt Valley, MD 21030
301-771-1151
Inquiry #239

MicroTouch Systems Inc.
55 Jonspin Road
Wilmington, MA 01887
508-694-9900
Inquiry #240

Taito Software Inc.
267 W. Esplanade,
N. Vancouver, B.C.
Canada, V7M 1A5
604-984-3344
Inquiry #241

XYXIS Corporation
14631 Martin Drive
Eden Prairie, MN 55344
612-949-2388
Inquiry #242

A Beginner's Guide To Desktop Publishing *On The Amiga*



by John Steiner

Desktop publishing applications have brought people into the computer age in vast numbers. Basically, this is because personal computers linked to laser printers have the ability to produce near typeset quality output. The Amiga is more than capable at tasks associated with desktop publishing. Desktop publishing software that is available for the Amiga has a wide range of capabilities for a wide range of publishing needs. Whether your publishing needs are as simple as a quarterly users group newsletter, or as complex as a monthly, full-color, glossy magazine, Amiga desktop publishing tools are available to help you get the job done.

Many people are confused about the difference between word processing and desktop publishing. Originally, word processors were used to replace the typewriter, and they did so with lower quality considering the capabilities of early personal printers. High quality printing devices and more powerful software have made word processing more powerful, more capable and much more attractive, thus ensuring a permanent place for computers in the business office.

DTP VS. WP

A desktop publishing program is not designed to be, and in most cases, is not very powerful as a word processing program. The major function of a desktop publishing program is taking text (that was previously created in a word processor) and graphics (that were previously created in a graphics or paint program) and seamlessly integrating them into a single, cohesive document. The desktop publishing program usually forgoes strong text editing tools in favor of better quality layout and page design tools. The fine line that separates the two categories is becoming blurry as word processing programs add features that have previously been found only in desktop publishing programs. Further confusion develops as competition in the desktop publishing market is driving program developers to add powerful word processing features such as spell checking and index generation.

This article is not written with any one desktop publishing program in mind. Instead, the layout and design ideas expressed here are designed to improve the appearance of your documents, without regard to the particular desktop publishing program you may use. All of the ideas and techniques you will see here may be implemented on virtually all Amiga based desktop publishing programs. Even if you don't have desktop publishing software, you may be able to use your word processor to implement many of these concepts. Consider my suggestions as recommendations, not as absolute requirements, when you plan your next desktop publishing project.

This article is divided into three parts. Several page layouts and design techniques are shown which have been proven to make documents look attractive to the reader. Type selection considerations are suggested to help you to choose appropriate fonts for the style of document you are producing. Graphic elements can enhance the readability of your

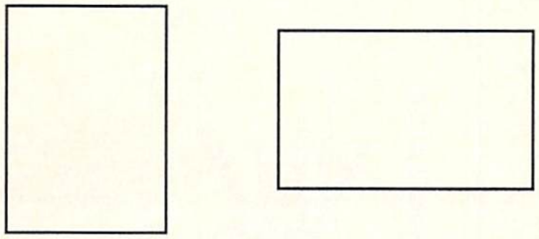


Figure One
Portrait (left) vs. Landscape Orientation.
Landscape orientation is often used for documents with large amounts of charts or graphs that are best displayed in a horizontal format.

documents by making your pages appear more interesting and inviting to the reader.

PAGE LAYOUT AND DESIGN TECHNIQUES

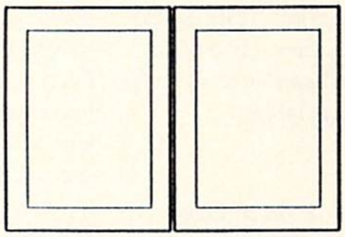
Before you begin your desktop publishing project, think about the nature of the document. Like a builder who draws plans before beginning a construction project, you should think about and "draw plans" before you begin construction on your pages. Start your document by designing a "page grid" layout, and if the document is a periodical, use the grid every time you do a new issue. The page grid should remain the same throughout the document, as it creates an overall "look and feel" to the publication. Changes to the master page grid should be the exception, and should be reserved for the page that has a special side bar story, or unusual illustration. Even if you are doing a series of one page documents, the repetitive use of a similar grid for each page invites the reader in to visit familiar surroundings.

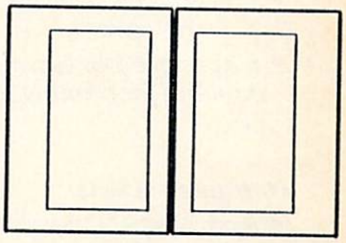
The page grid is composed of several easily recognizable page elements including margin settings, the number of columns, and column and gutter width (The gutter is the white space between columns.) Other components of the page grid include elements such as page format and page size.

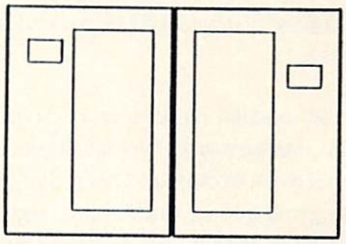
The page format is suggested by the type of information to be presented. The two terms that are most often used to describe page format are portrait and landscape. Portrait orientation is used more often, but landscape setting is used for documents that contain large numbers of horizontal charts, tables or other horizontal data. *See Figure One.*

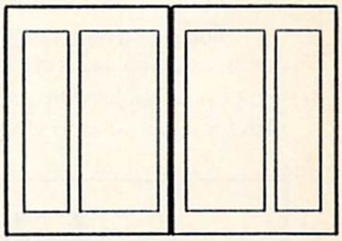
The first step in setting up a page grid is to decide how big each page is going to be. Below are some facts that may help you choose a page size.

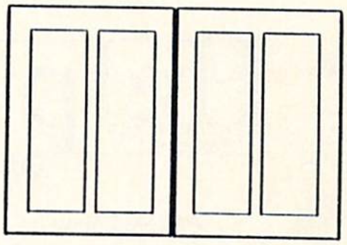
The two most common page sizes for multiple page documents are 8.5 in. x 11 in. (letter size) and 5.5 in. x 8.5 in. (half-size). Other common sizes are 8.5 in. x 14 in.











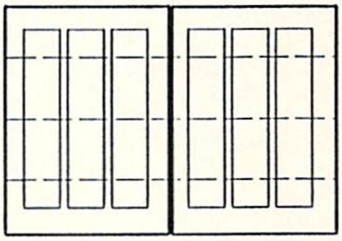


Figure Two ➡
Several commonly found page layouts. Use an imaginary series of horizontal lines to divide the pages into thirds or fifths for inserting graphics or photographs.

(legal) and 11 in. x 17 in. The latter size is often used to print four 8.5 in. x 11 in. pages (using both sides of one sheet—two pages per side). The sheet is then folded in half and becomes a four page tabloid

Letter size can:

- *fit more information on a page than half- size pages.*
- *utilize added white space to provide a more "open" look.*
- *make some jobs easier as it is standard for printing and duplication.*

Half-page size is:

- *more compact, therefore less intimidating to the reader.*
- *easier to use and reference, because of its small size.*
- *easy to place two half size pages each side of a single* 8.5x11 in. sheet of *paper.*

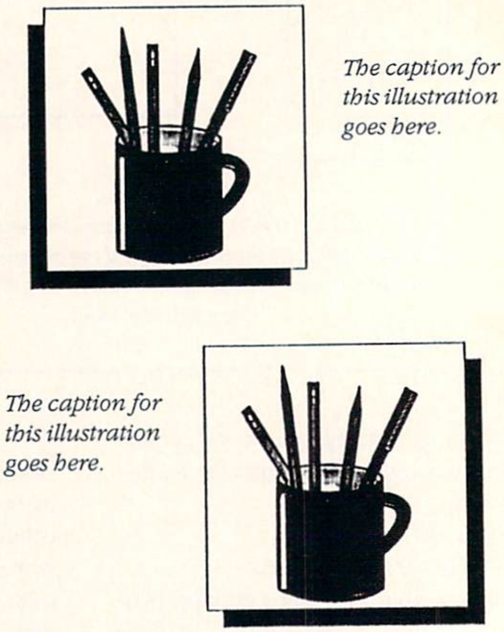
Avoid unusual page sizes as deviations from standard sizes will cause your printing bill to be excessive. This is due to the waste generated by printing on larger sheets which have to be cut to the correct size. Excess paper ends up being discarded. If you need a smaller size, work in sizes that are evenly divisible into a normal page size (half page, quarter page, eighth page, etc.)

The page grid also consists of vertical boxes, called columns that will contain the text of your publication. As a general rule, plan for about 50 to 65 characters per line when defining the width of a column. If the line length is longer than this, it may be difficult to find the start of each line after reading the previous line. If the line length is much shorter, there may be too many hyphens generated, reducing the readability of the document. Consider the font-related characteristics of line spacing, type size and style, and page size when determining column width. The use of a specific font, style and size will have a large effect upon the desired column width. *See Figure Two.*

Several examples of multiple column formats are shown in the illustrations. Use these as a starting point, and don't forget to take a critical look at the publications you read regularly. Think about what makes their pages look attractive to you, and try to incorporate those characteristics into your own documents. If your desktop publishing program comes with professionally done style sheets or templates, try using them as examples for your own documents.

The white space between columns is known as the gutter. The gutter helps keep the reader's eyes on the correct column as the text is being read. A vertical rule (a thin vertical line) separating the gutters allows the gutter width to be smaller, as the rule helps keep the eyes from straying into the wrong column. One rule about gutter width to keep in mind is that it is generally considered unattractive to have different gutter widths on the same page when using multiple columns.

Figure Four
Use drop shadows to help guide the reader to the caption.


The caption for this illustration goes here.
The caption for this illustration goes here.

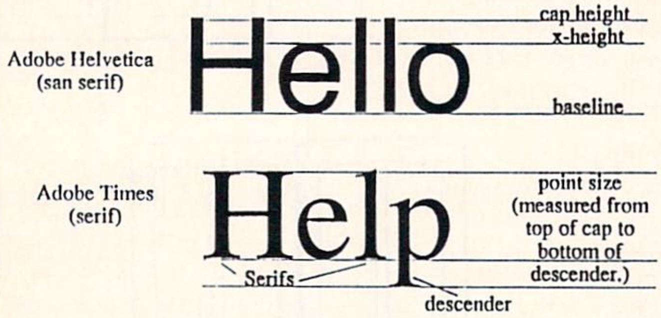

Adobe Helvetica (san serif)
Hello
cap height
x-height
baseline
Adobe Times (serif)
Help
point size (measured from top of cap to bottom of descender.)
Serifs
descender

Figure Three
Characteristics of a typeface.

SELECTING TYPE

Since before the invention of movable type for your document, the publishing industry has been conscious of the appearance of the letters as presented on the page. Any printed character has a mixture of the following characteristics:

The shape and general appearance of characters is called a font, or typeface. Examples of fonts include Times, Helvetica, New Century, etc.

The thickness and slant of the lines creating each character is called the typestyle or, simply, style. The most commonly used typestyles are normal, bold, italic, and bold italic.

The size of each letter in the font can be measured in several ways. Fonts are usually measured in "points", and a point is 1/72 of an inch. Normal newspaper type varies between 9 and 11 points. A 36 point headline is approximately 1/2 inch tall.

The selection of an attractive font for your document should be one of the overall design considerations. Here are some general rules regarding font selection.

Fonts are either serif or sans-serif. A serif is a "tail" at the end of each part of a letter. Serif fonts are easier to read in smaller type sizes, such as the body text found in most documents. Sans-serif fonts are cleaner and more modern looking, however they tend to be harder to read, especially in smaller sizes. A common practice among page designers is to use a serif font for headlines and a serif font for body text.

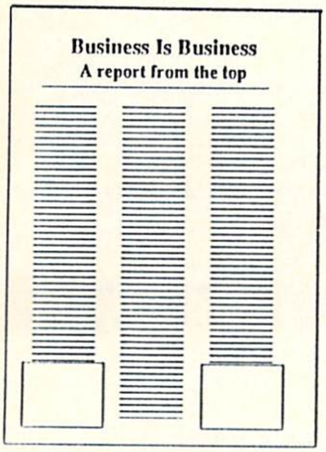
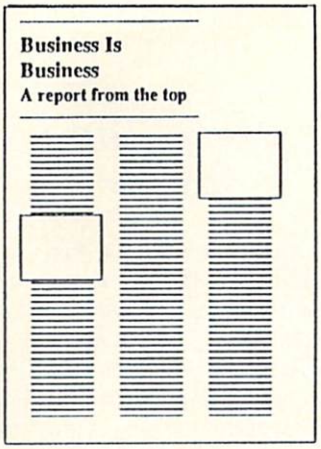


Figure Five
Symmetrical and asymmetircal pages.



Don't fall prey to the novice desktop publisher's number one sin. Use only a minimum number of different fonts. Excessive use of different fonts makes your documents look unattractive, and gives it a "kidnap note" appearance.

Use fonts consistently. For example, if you choose an Avant Garde font for heads and sub-heads, you should use that font throughout the document. Mixing fonts, sizes and styles excessively causes confusion for the reader as to what is being emphasized on the page.

Combine typestyles (bold, italic, etc.) and point sizes to create the variety that documents need to help maintain reader interest. Designers attempt to make effective use of typestyles by following several general guidelines. As with the use of fonts, use typestyles consistently. Use typestyles for emphasis. Think of bold as a shout, italics for stress, and bold italics for urgency. Excessive use of typestyles other than normal reduces the impact of your message. Use the following guidelines to determine when to use which type sizes. Make body copy 8 to 12 points. Make subheads the same size to a few points larger than body copy. Main headlines can be 14 to 20 points. Cover page text can be 24 to 48 points. Captions, headers and footers are usually the same size or slightly smaller than the body copy. Here are some general guidelines on text handling. A combination of upper and lower case text enhances readability. Use all capitals sparingly. Reverse text can draw attention to important information. Like bold and italics, excessive use of most special effects is counterproductive.

Use graphics elements to make your documents more interesting. The use of ruling lines, text boxes, illustrations, charts and tables all enhance the reader's retention of your message. Use ruling lines or "rules" to separate and organize subject matter, keep the reader's eyes on the correct column, and add visual interest to the white space in your documents. As with most desktop publishing tools, don't overuse rules. They can make your document look disjointed and give the appearance that the columns of text have no relation to each other.

Be consistent with the use of rules. If a 3 point wide rule is used at the top of the page, make sure all pages with that rule use the same 3 point specification. Use thicker rules to subdivide headings, thinner rules to organize sub-headings. Make the rules enhance your presentation without calling attention to themselves. A ruling box is used when you want the reader to notice important information such as disclaimers, cautions and warnings.

Ruling boxes also often surround the "side bar". A side bar usually includes information which highlights or illustrates the major topic of the body copy. Drop shadows help to set boxes off from the body text. The position of the drop shadow will help guide the reader's eye to the caption. Therefore captions should be placed opposite the drop shadow. Drop shadows are best reserved for smaller boxes. Large boxes can be more effectively set off from the normal text by position and by the use of rules. *See Figure Four.*

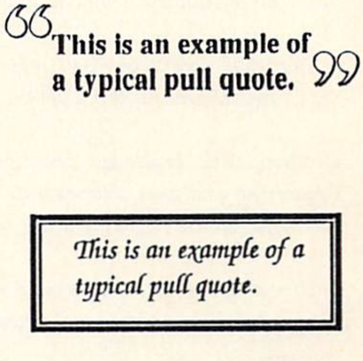
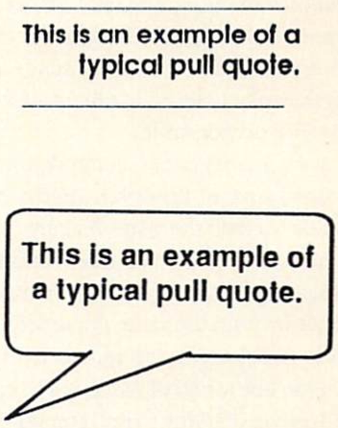

This is an example of a typical pull quote.
This is an example of a typical pull quote.

Figure Six
Pull quotes can help break up large amounts of text in your publications.


This is an example of a typical pull quote.
This is an example of a typical pull quote.

Use symmetry and asymmetry to your advantage when placing graphics and text boxes on the page. The choice between them can have a tremendous effect on the overall

The Ten Commandments for Desktop Publishers

1. Thou shalt use the Save As option before using the Save option. Failure to do this may create a document called Untitled, or may damage any style sheets or templates you are currently using.

2. Thou shalt use the Save option often. Failure to do this may cause loss of valuable work and time.

3. Thou shalt backup thy work often.
See Commandment number 2 above.

4. Thou shalt implement the liberal use of subdirectories. Organizing your work into separate subdirectories helps to make most efficient use of your time and your hard disk real estate.

5. Thou shalt keep your documents small. Smaller documents make for quicker screen updates, and generally faster operation of your software.

6. Thou shalt follow the K.I.S.S. principle (Keep it simple, stupid). Documents that are too complicated, look cluttered and tend to lose reader interest.

7. Thou shalt keep the number of fonts in a document to the minimum. See number 6 above.

8. Thou shalt use white space liberally. See number 6 above.

9. Thou shalt proofread pages from bottom to top.
Reading the text backwards forces you to see the words that are there, not the words you thought you typed.

10. Thou shalt have all important documents proofread by others. Someone else will usually see the mistakes that the original creator can easily overlook.

By John Steiner (with a little help from his friend, Jacques Chatenay)

appearance of your document. In general, a symmetrical design is less dynamic in appearance and tends to be less visually interesting than asymmetric as the examples in *Figure Five* demonstrate.

Asymmetric pages can look jumbled and disorganized, however, unless plans are made to keep the page visually organized. In any case, when you are working on multiple-page documents, never mix the two styles within the same document. The result is visual confusion for the reader.

Don't be afraid of white space on the page. Instead of trying to find something to fill it, try to position the space opposite a graphic, or as a buffer between two stories. If you've got more white space than you can use, and don't have an appropriate graphic or visual element to place in the document, use a "pull quote". A pull quote is an often used tool of the newsletter editor to stretch an article to finish filling a given column. Making a pull quote is easy. First, prepare a place for text that will, when placed in the middle of a column, allow the text in the last column to flow to the bottom of the column without going into a new column. Then find an appropriate quotation from the article that makes a cogent or controversial point about the topic, and copy that quote into the space reserved for it. Change the typestyle and font to match a commonly used headline or subhead in the document. Finally consider whether or not the pull quote should be set off from the article by rules or a shadow box. *See Figure Six.*

Desktop publishing can make your printed documents more readable and more able to achieve their purpose. Use these guidelines and you will make your desktop published documents more attractive and professional in their appearance. If you have questions or comments on desktop publishing on the Amiga, you may contact me by writing to:

John Steiner
c/o Amazing Computing
Box 869
Fall River, MA 02722
...or leave EMail to
John*S on People Link or
73075,1735 on CompuServe

About The Author

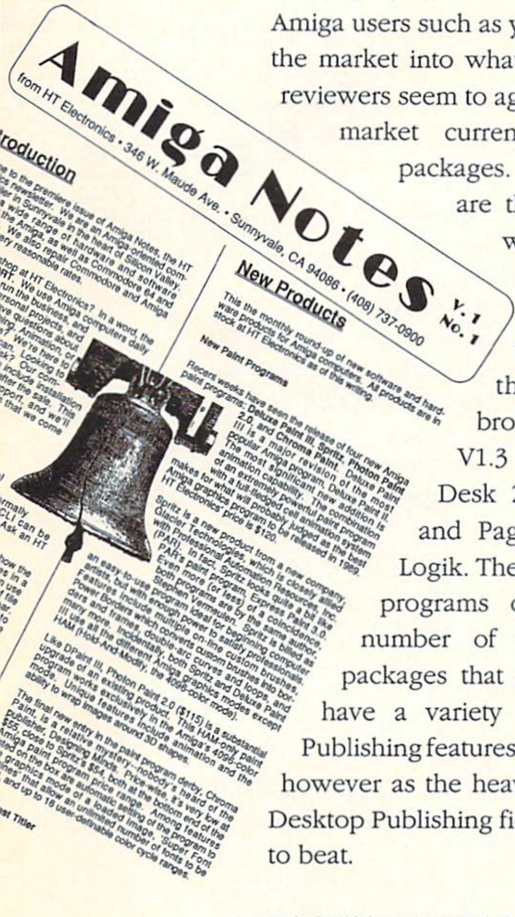
John Steiner is a freelance author who writes about the Amiga, other computers, and desktop publishing. He has four books published by Prentice Hall to his credit, and he is a regular contributor to Amazing Computing magazine. John is also an educator and teaches electronics and computer programming classes, as well as workshops and seminars on desktop publishing. He is also the Club Chair of the Desktop and Electronic Publisher's Online Terminal (DEPOT) on PeopleLink, a nationally accessible electronic information service.

•AC•

AMIGA
•DESKTOP• PUBLISHING

A New Era?

*Sample layout in Page Stream.**



Amiga Notes V.1 No.1
from HT Electronics • 346 W. Maude Ave. • Sunnyvale, CA 94086 • (408) 737-0900

New Products

This the monthly round-up of new software and hardware products for Amiga computers. All products are in stock at HT Electronics as of this writing.

New Paint Programs

Recent weeks have seen the release of four new Amiga paint programs: **Deluxe Paint III**, **Spritz**, **Photon Paint 2.0**, and **Chroma Paint**. Deluxe Paint III is a major revision of the most popular Amiga program, Deluxe Paint II. The most significant new addition is animation capability. The combination of an extremely powerful paint program with a full-fledged cell animation system makes for what will probably be judged as the best Amiga graphics program to be released in 1989. HT Electronics' price is $120.

Spritz is a new product from a new company, Glacier Technologies, which is closely allied with Professional Automation Resources, Inc. (PAR). In fact, Spritz looks quite a bit like PAR's paint program, Express Paint 3.0. Even more (or less) of a coincidence, both programs are by the same author, Stephen Vermeulen. Spritz is billed as an easy-to-use program ideal for beginning computer artists, but with enough power to satisfy professionals. Features include multiple on-line custom brushes, Power Borders which converts custom brushes into borders and frames, double-arc curves and loops, and many more. Incidentally, both Spritz and Deluxe Paint III use all the different Amiga graphics modes except HAM (Hold-And-Modify, the 4096-color mode).

Like DPaint III, Photon Paint 2.0 ($115) is a substantial upgrade of an existing product. This HAM-only paint program works exclusively in the Amiga's 4096-color mode. Unique features include animation and the ability to wrap images around 3D shapes.

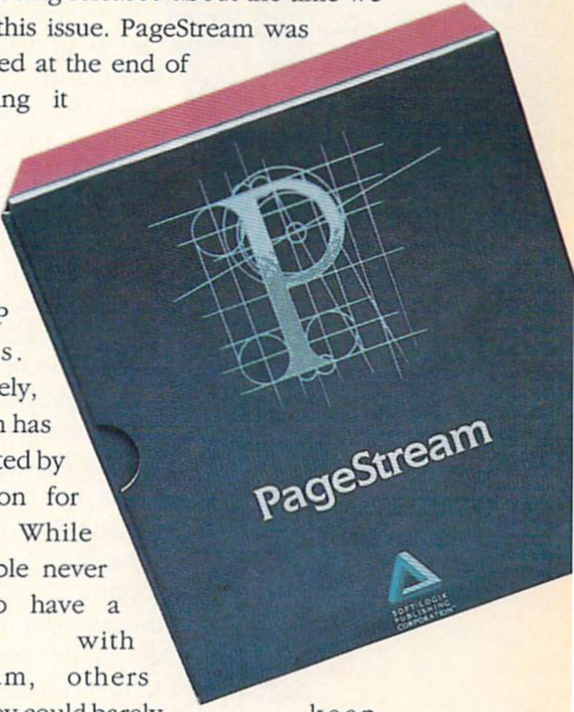
The final new entry in the paint program derby, Chroma Paint, is a relative mystery--nobody's heard of the publisher, Designing Minds. Price-wise, it's very low at $55, close to Spritz's $54, both at the bottom end of the Amiga paint program price range. Among features listed on the box are automatic setting of the program to the graphics mode of a loaded image, "Super Font Lines" that allow an unlimited number of fonts to be and up to 16 user-definable color cycle ranges.

Over the years a number of Amiga Desktop Publishing packages have come and gone. Some have been quite excellent and some have been...well, let's just say they were not quite what we hoped they would be.

Time, trial and error, and the input of Amiga users such as yourselves have molded the market into what it is today. Users and reviewers seem to agree that the Amiga DTP market currently has three major packages. These three programs are the most expensive, as well as the most complex and they have an ever-increasing majority of the features offered by their non-Amiga big brothers. Professional Page V1.3 from Gold Disk, City Desk 2.01 from MicroSearch and PageStream V1.8 by Soft Logik. These are not the only DTP programs out there, in fact, a number of the word processing packages that are currently available have a variety of low-level Desktop Publishing features. These three do remain, however as the heavyweights if the Amiga Desktop Publishing field—these are the ones to beat.

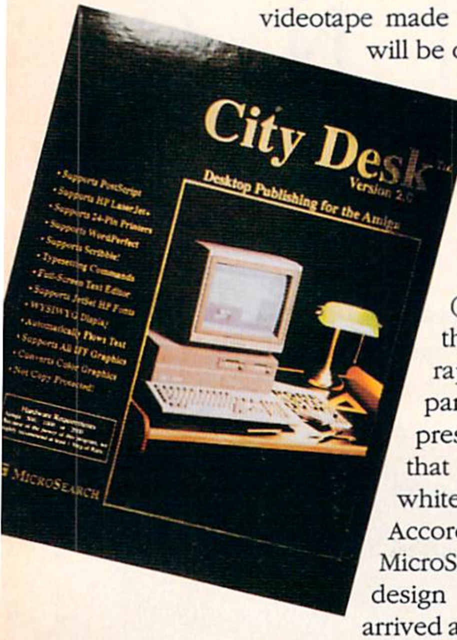
PAGESTREAM V 1.8

As for PageStream, their latest version, V1.8, was being released about the time we compiled this issue. PageStream was first released at the end of "88, making it the "new kid on the block" in Amiga DTP programs. Unfortunately, Pagestream has been haunted by a reputation for crashing. While some people never seemed to have a problem with PageStream, others claimed they could barely keep it running. On the other hand, PageStream also has the reputation for being the most intuitive, ergonomically designed and user-friendly of the three giants. Apparently this has been a strong enough recommendation to keep at lot of people buying and using PageStream despite actual and rumored problems. According to Gina Tilker at Soft Logik, version 1.8 will not only have several new features but should have all of those nasty bugs fixed! Here's to no more crashes!



(continued)

CITY DESK 2.01



City Desk, in its latest revision (2.01), offers more speed and flexibility than ever before. Their latest manual is better written and easier to understand than ever before. In fact, MicroSearch is marketing a tutorial videotape made by Vanguard Video which will be of real assistance in learning the package—particularly for the first-time user.

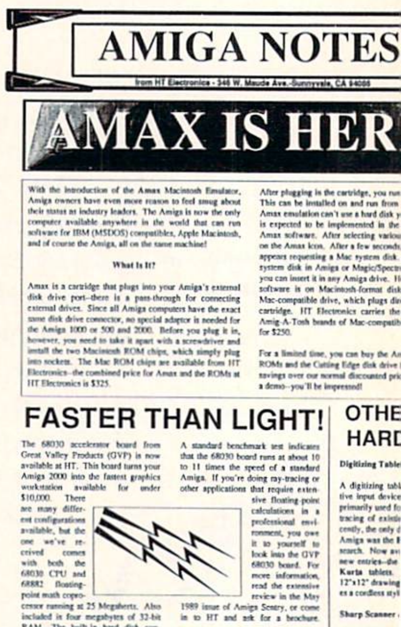
The folks at Sunrize Industries (who wrote the program), as well as the people over at MicroSearch (who publish CD 2.01) feel that they have gotten a bad rap from the Amiga market and particularly from the Amiga press. The reason, they feel, is that they are strictly a black & white (and gray-scale) program. According to Tony Johnson at MicroSearch this was a tough design decision, but one they arrived at way back at the beginning. Their view is that the majority of Amigans with color printers or access to color printers are going to be hobbyists or other non-professional DTP users with various types of dot matrix printers. They feel that the more serious Amiga DTP user may well have access to laser printers but will rarely have access to or really need the use of color. Who knows? They may be right.

Among the many highlights of City Desk 2.01 are the ability to auto-flow long documents (up to 99 pages) and the ability to download fonts to the HP LaserJet.

PROFESSIONAL PAGE V 1.3

Professional Page, originally released in January of '87 was the first of these packages on the market. After four revisions, the last one being V1.3 (released last October), it is better than ever. Considered by some to be the premier Desktop Publishing package, Pro Page has also had a reputation of being too hard to learn as well as difficult to use. Gold Disk claims the new version is now faster and easier-to-use, with more features than ever. Professional Page 1.3 offers most of the features of higher-priced non-Amiga DTP packages.

Among the new features of their latest revision are the ability to import encapsulated PostScript graphics and ability to use Compugraphic fonts. These are outline or structured fonts much like PostScript fonts, however Mary Lynn Hotte at Gold Disk says that the Compugraphic fonts have a much higher output to non-PostScript printers.



AMIGA NOTES

from HT Electronics - 346 W. Maude Ave.-Sunnyvale, CA 94086

AMAX IS HER

With the introduction of the Amax Macintosh Emulator, Amiga owners have even more reason to feel smug about their status as industry leaders. The Amiga is now the only computer available anywhere in the world that can run software for IBM (MSDOS) compatibles, Apple Macintosh, and of course the Amiga, all on the same machine!

What Is It?

Amax is a cartridge that plugs into your Amiga's external disk drive port--there is a pass-through for connecting external drives. Since all Amiga computers have the exact same disk drive connector, no special adaptor is needed for the Amiga 1000 or 500 and 2000. Before you plug it in, however, you need to take it apart with a screwdriver and install the two Macintosh ROM chips, which simply plug into sockets. The Mac ROM chips are available from HT Electronics--the combined price for Amax and the ROMs at HT Electronics is $325.

After plugging in the cartridge, you run
This can be installed on and run from
Amax emulation can't use a hard disk y
is expected to be implemented in the
Amax software. After selecting variou
on the Amax icon. After a few seconds
appears requesting a Mac system disk.
system disk in Amiga or Magic/Spectr
you can insert it in any Amiga drive. H
software is on Macintosh-format disk
Mac-compatible drive, which plugs dir
cartridge. HT Electronics carries the
Amig-A-Tosh brands of Mac-compatib
for $250.

For a limited time, you can buy the A
ROMs and the Cutting Edge disk drive
savings over our normal discounted pri
a demo--you'll be impressed!

FASTER THAN LIGHT!

The 68030 accelerator board from Great Valley Products (GVP) is now available at HT. This board turns your Amiga 2000 into the fastest graphics workstation available for under $10,000. There are many different configurations available, but the one we've received comes with both the 68030 CPU and 68882 floating-point math coprocessor running at 25 Megahertz. Also included is four megabytes of 32-bit RAM. The built-in hard disk controller works with AT-type hard drives, and is autoboot capable.

A standard benchmark test indicates that the 68030 board runs at about 10 to 11 times the speed of a standard Amiga. If you're doing ray-tracing or other applications that require extensive floating-point calculations in a professional environment, you owe it to yourself to look into the GVP 68030 board. For more information, read the extensive review in the May 1989 issue of Amiga Sentry, or come in to HT and ask for a brochure.

OTHE
HARD

Digitizing Table

A digitizing tabl
tive input device
primarily used fo
tracing of existi
cently, the only
Amiga was the
search. Now av
new entries--the
Kurta tablets.
12"x12" drawing
es a cordless styl

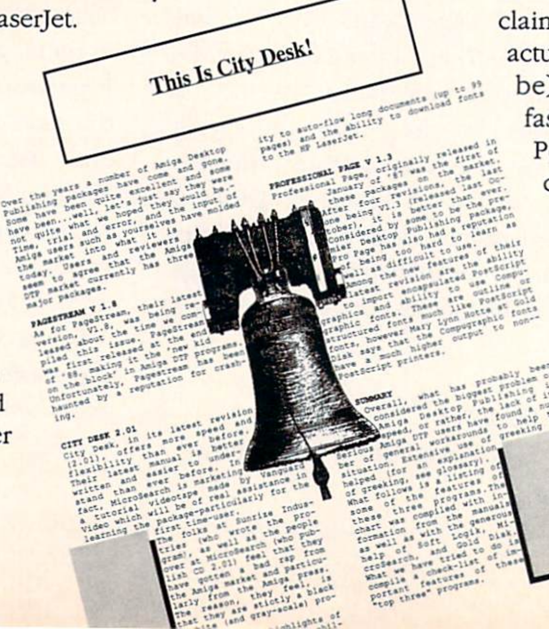
Sharp Scanner

Full-color top-q
ing is coming a
on the Amiga fa
continued page

*Sample layout in Pro Page.**

SUMMARY

Overall, what has probably been considered the biggest problem of Amiga Desktop Publishing is speed, or rather, the lack of it. Serious Amiga DTP users have found a number of general workarounds to help the situation. Extensive use of greeking has helped (for an explanation of greeking, see glossary). Fortunately, the latest versions of all three claim to be (and actually appear to be) considerably faster than before. Perhaps with the continued proliferation of the '020-equipped 2500's Amiga Desktop Publishing will really flourish.



This Is City Desk!

Over the years a number of Amiga Desktop Publishing packages have come and gone. Some have been quite excellent and some have been...well, let's just say they were not quite what we hoped they would be.- Time, trial and error, and the input of Amiga users such as yourselves have molded the market into what it is today. Users and reviewers seem to agree that the Amiga DTP market currently has three major packages.

PAGESTREAM V 1.8

As for PageStream, their latest version, V1.8, was being released about the time we compiled this issue. PageStream was first released at the end of '88, making it the 'new kid on the block' in Amiga DTP programs. Unfortunately, Pagestream has been haunted by a reputation for crashing.

CITY DESK 2.01

City Desk, in its latest revision (2.01), offers more speed and flexibility than ever before. Their latest manual is better written and easier to understand than ever before. In fact, MicroSearch is marketing a tutorial videotape made by Vanguard Video which will be of real assistance in learning the package-particularly for the first time-user.

The folks at Sunrize Industries (who wrote the program), as well as the people over at MicroSearch (who publish CD 2.01) feel that they have gotten a bad rap from the Amiga market and particularly from the Amiga press. The reason, they feel, is that they are sticlty a black white (and gray-scale) pro-

ity to auto-flow long documents (up to 99 pages) and the ability to download fonts to the HP LaserJet.

PROFESSIONAL PAGE V 1.3

Professional Page, originally released in January of '87 was the first of these packages on the market. After four revisions, the last one being V1.3 (released last October), it is better than ever. Considered by some to be the premier Desktop Publishing package, Pro Page has also had a reputation of being too hard to learn as well as difficult to use. Among the new features of their latest revision are the ability to import encapsulated PostScript graphics and ability to use Compugraphic fonts. These are outline or structured fonts much like PostScript fonts, however Mary Lynn Hotte at Gold Disk says that the Compugraphic fonts have a much higher output to non--PostScript printers.

SUMMARY

Overall, what has probably been considered the biggest problem of Amiga Desktop Publishing is speed, or rather, the lack of it. Serious Amiga DTP users have found a number of general workarounds to help the situation. Extensive use of greeking ahs helped (for an explanation of greeking, see glossary). What follows is a listing of some of the features of these three programs.The chart was compiled with information from the manuals as well as with the generous help of Soft Logik, MicroSearch, and Gold Disk. What we have tried to do is compile a check-list of important features of these "top three" programs.

*Sample layout in City Desk.**

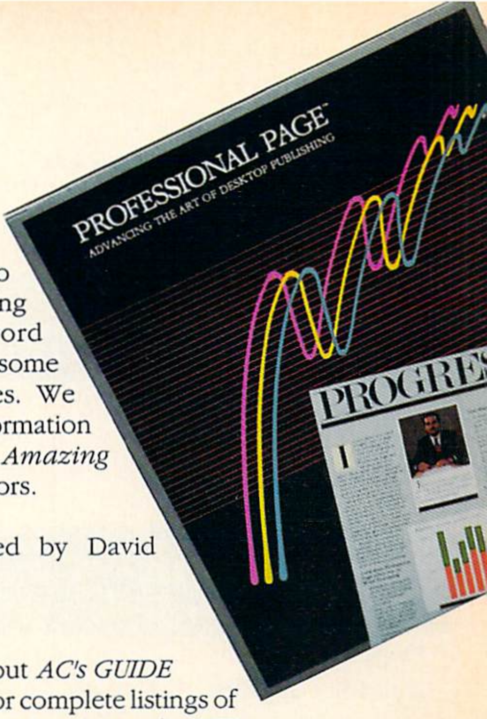
Hopefully, now that Commodore has also announced the debut of the 2500/30 (equipped with a 25 mhz 68030 as well as a 25mhz 68882 and an MMU) things will really take off. Perhaps now the problem of speed is finally beginning to fade away.

What follows is a listing of some of the features of these three programs.The chart was compiled with information from the manuals as well as with the generous help of Soft Logik, MicroSearch, and Gold Disk. What we have tried to do is compile a check-list of important features of these "top three" programs.

We have done our best to represent features that would be important to you, our readers but, in the end, you must decide what features really are important. It has been checked by all three companies for accuracy but in no way does it represent all of the many features of these fine programs. We have also mentioned that an increasing number of Amiga word processing programs offer some basic page layout features. We will be offering more information on this in an upcoming *Amazing* spotlight on word processors.

*Sample layouts produced by David Duberman.

P.S. Don't forget to checkout *AC's GUIDE to the Commodore Amiga* for complete listings of Desktop Publishing (and related items). DTP programs, word processors, clip art, fonts and more—it's all in the *GUIDE.*



FEATURES	PAGESTREAM	CITY DESK	PROFESSIONAL PAGE
GENERAL			
Copy Protected	NO	NO	NO
Keyboard Equivalents for Menu Items	MOST	ALL	MOST
Support for 2024 or Moniterm Monitors	MONITERM	BOTH	BOTH
Automatic Hard Drive Installation	NO	NO	NO
Variable Zoom	YES	STEPPED	STEPPED
Undo	YES	NO	NO
Pal Support	YES/AUTO	YES /AUTO	YES/AUTO
Interlace/No Interlace	SWITCHABLE	SWITCHABLE	SWITCHABLE
Multitasks	YES	YES	YES
DOCUMENT FEATURES			
Text Formats Directly Importable*	1,2, 3, 5, 6, 7	1,3, 5, 8	1, 3, 4, 5,6, 9
All Formatting Preserved	MOST	MOST	MOST
Subscript and Superscript	BOTH	BOTH	BOTH
Text Editing	YES	YES	YES
Append (combine documents)	YES	YES	NO
Color Text	YES	NO	YES
Widow and Orphan Control	NO	YES	NO
Global Search and Replace	YES	YES	YES
Number of Open Pages	INFINITE **	INFINITE **	INFINITE **

(continued)

DOCUMENT FEATURES (Continued)

Maximum Number of Pages	255	99	9999
Auto-Hyphenation	YES	YES	YES
Spelling Check	YES	NO	NO
Text Flow Around Graphics	YES	YES	YES
Text Flow Inside Graphics (Shapes)	NO	NO	NO

PRINTER OUTPUT

Gray Screens	YES	YES	YES
HP Laserjet Support	YES	YES	YES
24-Pin Support	YES	YES	YES
PostScript Driver	YES	YES	YES
Print Color Graphics	YES	NO	YES
Print Gray Scale Graphics	YES	YES	YES
Download fonts to PostScript Printer	YES	NO	YES
Download Fonts to HP Laser Jet	NO	YES	NO
Print HAM Pictures	YES	NO	YES

GRAPHICS

Size Imported Graphics	YES	YES	YES
Import Structured Art	YES	NO	YES
Full-Featured Graphics Editor	YES***	YES	YES
All Basic Drawing Features	YES	YES	YES
Import HAM	YES	NO	YES
Coordinates Feature	YES	YES	YES
Color Separations	YES	NO	YES
Import Encapsulated PostScript	YES	NO	YES
Convert Color to Grayscale	YES	YES	YES
Current Retail Price	$199.95	$199.95	$395.00

*Text Import Formats: 1—ASCII; 2—Excellence; 3—Word Perfect; 4—Textcraft +, 5—Scribble; 6—Prowrite; 7—Works; 8—Amiga Notepad; 9—Transcript

**Dependent on Memory

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Soft Logik Corporation
1131 S. Towne Square
Suite F
St. Louis, MO 63123
(314) 894-8608
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Inquiry #228

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Produced by Sunrize Industries
Distributed by MicroSearch, Inc.
9896 Southwest Freeway
Houston, TX 77074
(713) 354-1224
Price: $199.95
Inquiry #229

Professional Page 1.3
Gold Disk, Inc.
P.O. Box 789
Streetsville, Ontario,
Canada L5M 2C2
(416) 828-0913
Price: $395.00
Inquiry #230

A Desktop Publishing Primer

For those of you who are either brand-new to Desktop Publishing or are relative newcomers, we offer this basic primer. Desktop Publishing is different things to different people. Basically, most people refer to DTP as any publishing which begins with a personal computer. With as little hardware as an Amiga and a printer, a person can print flyers, newsletters, menus and more. For money!

Of course it helps if the printer is a top quality color ink-jet printer or a laser printer. It's also helpful to have a top-notch word processor and a scanner and/or digitizer. Having a large library of fonts and clip art is nice too. And, most of all, it helps if you have a background in, or just an excellent sense of graphic design.

On the following pages we have undertaken to give you some of the basics of DTP. We have included a glossary of some of the most basic and useful terms. We have also attempted to clear up some of the mystery surrounding printers, fonts, PostScript (and outline fonts in general) and the various parts of a document. Also included is an explanation of what is meant by downloadable fonts and resident fonts. We sincerely hope you find this information helpful.

It's all fit to print–but what do I print it with?

Thanks to the very industrious people in the Amiga marketplace, virtually every type of printer can now be used with an Amiga. These various printer types include:

- Daisy-wheel printers
- Dot-matrix printers
- Ink Jet printers
- Laser printers
- PostScript printers

DAISY-WHEEL PRINTERS

Daisy-wheel printers are a type of impact printer. That is, letters are created on the page by type heads actually hitting an ink or film ribbon against the page. In the case of a daisy-wheel printer all of the type heads are on a circular wheel which spins into the correct position just before printing each letter. These printers are usually black & white, but in some cases they can use a colored ribbon.

DOT-MATRIX PRINTERS

Dot-matrix printers are printers which create letters and/or graphics by putting patterns of dots on a page. In some cases these dots are created by impact with the page. These dot matrix printers are then also impact printers. These types of printer can either be black & white or color. Resolution of these machines is measured by the number of dots which can be placed in an inch. The less expensive dot matrix printers typically reproduce 72 dots per inch.

INK JET PRINTERS

Another type of dot-matrix printer, the ink jet printer also creates letters and/or graphics by putting patterns of small dots on the page. Unlike an impact printer however, these dots are placed by heads which spray a small dot of ink on the page. These printers can also be either black & white or color. The resolution of these printers usually runs about 180 dpi (dots per inch) but will vary with make and model.

LASER PRINTERS

Laser printers are non-impact printers which use the same basic principles of reproduction as a photocopy machine. A laser is used to etch the letters. Resolution of these printers is, in general, much better than all other types.

Generally speaking, resolutions of laser printers begin at a minimum 300 dpi. The next step up in resolution is generally about 600 dpi. Laser printer resolution can go as high as a few thousand dots per inch. Laser printers are now also available to do color printing but they typically cost tens of thousands of dollars.

They are still almost exclusively in the domain of specialty printing companies.

POSTSCRIPT PRINTERS

PostScript printers are laser printers which use the PostScript page description language and PostScript fonts. PostScript fonts may be sized up or down while maintaining the correct aspect ratio. Resolution does not vary with the size of PostScript fonts or PostScript graphics (usually known as EPS, or Encapsulated PostScript).

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Buying a Printer

If you have not already bought your printer or if you are in the market for a new one, there are several basic things to consider. For example, will you be using this professionally, semi-professionally, or just for your own entertainment? The answer to this question should help you answer many other questions such as:

1. What level of resolution do I need? Will 72 dpi be sufficient, or will I need to go to 180 dpi or even 300 or 600 dpi?

2. How much printing will I be doing? This will tell you whether to look for a light, medium, or heavy duty printer. Also this should provide a good clue as to what kind of warranty to ask for (or insist upon).

3. Do I really want, or more importantly, do I really need a color printer?

It seems that most of us Amigans really want a color printer. It is really great printing out your HAM graphics with an HP Paint Jet, Xerox 4020, or similar machine.

Keep in mind, however, that the vast majority of lower level professional DTP work, i.e. the type you can realistically expect to produce in your spare room will probably be black & white.

You may be able to *wow*prospective clients with 180 dpi color pictures, but to many others nothing short of the 300 dpi resolution of a laser printer will look professional. It is also important to remember that there are now a number of reasonably-priced laser printers on the market, and their prices (or the prices of better-quality used laser printers) may not be much above that of a better quality ink-jet type printer. This may honestly be the most important single question you will have to answer. This answer will point you in one of two directions in your effort to make the best overall decision regarding your choice of printers.

4. Depending on your projected uses, the printer's speed may be important. Most printers will give two specifications. One for letter quality or near-letter Quality (often listed as LQ or NLQ) and one for graphics. Once again, knowing what you will be doing is essential to the proper evaluation of these specs.

5. How much do I want to pay? How much can I really afford? For these answers you must look deep into your heart (and your wallet!)

There are several other lesser questions you might want to ask yourself—all of which really depend on your projected usage of the printer.

- You will want to know if the printer is single sheet or tractor feed. Many printers can accommodate both. If it is a single sheet printer it will probably feed from a tray. Can paper also be supplied manually? How many sheets of paper will the tray hold?

- Does this printer require a special kind of paper or is it a "plain paper" printer? How much does the paper for this printer cost? It will not do any good to stretch your budget to buy a printer and then later find out that you cannot afford the paper.

- How about ink or toner? How much is supplied with the printer? How long will it last? How much is it to replace? Toner cartridges for laser printers can be very expensive, so can colored inks and ink cartridges. As regards paper and ink or toner, it is very important to get a very good idea of the operating costs of a printer before you buy.

- Besides the cost of inks/toners and paper, it is very important (especially for those of you not living in a major metropolitan area) to check on the availability of these items. Is there a dealer nearby who sells these supplies? Are they always in stock? Are they obtainable by mail-order? Will I have to stockpile these items so that I never run out?

- Will this printer also print on envelopes or mailing labels? Again, it is vital that you really think out all of the possible and probable uses of your printer before you buy.

- Also important is whether or not the printer has "resident" fonts; how many it has and whether or not fonts can be added or downloaded.

- It is equally important to make sure that a printer driver (a set of computer-printer interface instructions) is available for this printer—preferably your DTP program will contain such a driver.

Some of the more obvious questions which are easily overlooked:

- Is the printer a name brand? While not a guarantee of perfection, few of the larger printer manufacturers became succesful by making and selling poor-quality units. If nothing else, having a brand name printer may make it easier to find service and/or parts.

- While we're on the subject—how about service and parts? Can my dealer fix this printer if it breaks down? If not, exactly how far away will I have to send it? In either case, how long is the average turn-around time on repairs (including shipping, if necessary).

- And speaking of service and warranties, what kind of warranty comes with the printer, how long is it and exactly what is covered?

These type of questions are very important to anyone who enjoys peace of mind, and they are vital if you have any thoughts at all of using your printer in a professional capacity.

In addition to thinking of major service problems, you should also investigate what sort of regular maintenance may be necessary. For instance, with some ink-jet printers, you must regularly clean out the spraying heads—so the ink does not clog. (By the way, some of the ink-jet printers have disposable heads; when you replace the ink supply you replace the heads. Check it out. There are advantages to both methods. I have friends who swear by each different type.)

In general you must be aware of exactly what you will be printing and make sure that all programs you may wish to print from are compatible with your printer. Remember that even if DTP is your main thing, you may occasionally want to print from a paint program. Or perhaps you will want to print from an accounting program (to bill a client, for example). Or you may wish to print a list of clients from a spreadsheet program. As always, serious pre-planning can eliminate serious after-the-fact pain!

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SCSI Controller, Word/Sync	170.00
SCSI Controller, Kronos	220.00
Spirit Boards 0K	234.99
StarBoard2, 500/1000 0K	250.00
SupraRAM 2000 0K	160.00
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Upper Deck (Starboard)	51.28

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Circle 134 on Reader Service card.

PostScript, or not PostScript, that is the question!

PostScript is a page description language which was invented by the people over at Adobe Systems, Inc. It has been available and in use for several years on both IBM and Macintosh computers. It is generally considered to be a standard in fonts and graphics systems. As of this writing, all of the major Amiga Desktop Publishing packages allow at least some use of PostScript fonts.

If you are not yet familiar with PostScript, then "page description language" probably would not mean much to you. What this translates to in English is that in the PostScript system, letters and numbers (characters) as well as graphics (in the case of EPS [encapsulated PostScript) are described electronically by the parts which make up the characters or graphics and their relationships to each other with no reference to size. In other words each letter is described in terms of itself.

This may still be somewhat confusing. Let's try this.

Here is a computer describing a standard "E" to itself:

There are a 1-inch vertical line and three 1/3-inch horizontal lines. The three horizontal lines begin at the vertical line and go to the right. The first horizontal line begins at the baseline of the vertical line; the second begins 1 inch above the baseline, and the third line begins one-half inch above the baseline.

Here is a "PostScript" description:

There is a vertical line of "x" height and there are three horizontal lines 1/3 "x" length. The horizontal lines begin at the vertical line and go to the right. One horizontal line is placed at 0% of "x", the second at 50% of "x" and the third at 100% of "x".

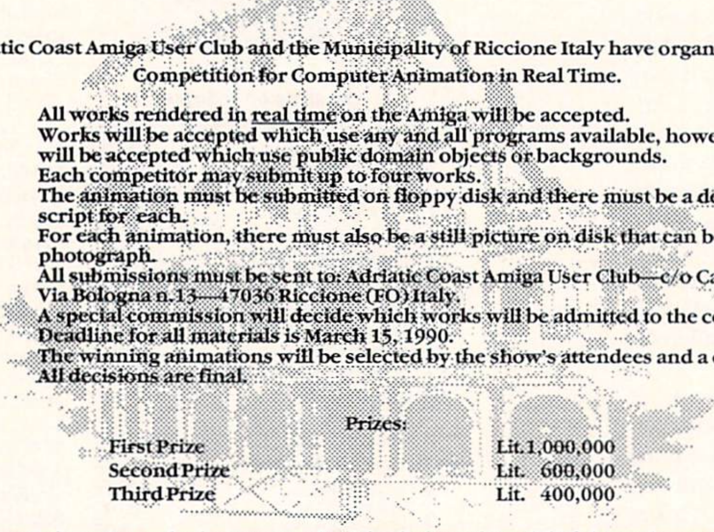
I'll admit this description takes some pretty serious liberties, but if the concept of outline fonts or PostScript was a complete mystery to you before now, perhaps this will give you a slightly better idea of what it is.

By the way, while PostScript may be the name most familiar to you there are other similar fonts. The generic name for these structured fonts is outline fonts. Compugraphic fonts from AGFA/ Compugraphic is another well-known group of outline fonts.

The bottom line is that a outline font or structured graphic is almost infinitely sizeable. And, unlike the bitmapped fonts and graphics which we Amigans are most used to dealing, they will never suffer from the "jaggies". Even if you never quite understand the "mystery" of outline fonts or graphics, it is pretty easy to understand this important point.

BIT MOVIE '90

COMPETITION FOR COMPUTER ANIMATION IN REAL TIME



The Adriatic Coast Amiga User Club and the Municipality of Riccione Italy have organized the Third Competition for Computer Animation in Real Time.

1. **All works rendered in real time on the Amiga will be accepted.**
2. **Works will be accepted which use any and all programs available, however, no works will be accepted which use public domain objects or backgrounds.**
3. **Each competitor may submit up to four works.**
4. **The animation must be submitted on floppy disk and there must be a description and script for each.**
5. **For each animation, there must also be a still picture on disk that can be used for a photograph.**
6. **All submissions must be sent to: Adriatic Coast Amiga User Club—c/o Carlo Mainardi—Via Bologna n.13—47036 Riccione (FO) Italy.**
7. **A special commission will decide which works will be admitted to the competition.**
8. **Deadline for all materials is March 15, 1990.**
9. **The winning animations will be selected by the show's attendees and a qualified panel All decisions are final.**

Prizes:

First Prize	Lit. 1,000,000
Second Prize	Lit. 600,000
Third Prize	Lit. 400,000

Contest information and rules were translated (to the best of our ability) from a letter which we received from Carlo Mainardi. According to the letter, over 1500 people came to last year's competition. All entries last year were from Italy. Judging will take place April 14-16, 1990. For more information, write to:

Adriatic Coast Amiga User Club
c/o Carlo Mainardi
Via Bologna n.13
47036 Riccione (FO) Italy

Up The Download Staircase

Taking the idea of postscript just a bit further...

You may read in DTP books and manuals about screen fonts, printer fonts, bitmapped fonts, resident fonts, etc.. Somehow it all seems very confusing. I'll see if I can explain this without making you quite crazy.

Taking the easiest first: screen fonts are always bitmapped fonts. Basically this is an instruction to your computer to represent a character on you screen by using "x" amount of dots in a certain pattern. This is not always an instruction that a printer can understand. Remember, your Amiga's pixels are not square and not in any resolution. Also remember that the resolution of your screen is not the same as your printer. While most computers will attempt to reproduce a bitmapped font, the results are not always successful, and often they are quite disappointing.

Many printers will therefore have one or more resident fonts. What this means is that the printer itself will have instructions regarding the printing of a font or fonts that have been optimized for that printer. These resident fonts are generally in ROM on the printer, or in some cases, they may be changed or added to with optional plug-in cartridges.

If your Amiga does not have the same font as your printer's resident font, there are basically two choices. You can make the printer struggle to attempt to print the Amiga font, or you can print using the printer's font. In the first case your results may not be very good at all, while the printed results will be much better in the later case, even though the end result will not look like it did on your monitor. This can make page layout very difficult as you will have to print each section of your document out before you really have any idea what it will look like.

In the case of a PostScript printer, things get a little more extreme. While a PS printer will always want to print in a PS font, a PS font cannot be properly represented on your monitor. Therefore, when working in a PostScript environment, you really need two versions of each font you will be working with, your screen or bitmapped version and the printer's PostScript version.

What if your printer does not have a particular PostScript font? Where does that leave you? If your printer is the type with interchangeable font cartridges, then you can just go out and buy the proper cartridge. If this is the case, there are some programs that still give you an option. In some cases you can "download" a font to your printer. Most of the better printers will accept this but you must have this capability both in your printer and within your DTP program. In the case of a PS printer, your program will then use its bitmapped version of a font for representation on your monitor, and it will then download the PS version of the font to your printer's memory before printing. Generally speaking, this will have to be done each time you reboot, because your printer will hold this information only temporarily.

It may also be important to note that this also works with many non-PS printers. Some programs, for instance, will download fonts to the Hewlett-Packard Laser Jet printers.

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A Glossary of Desktop Publishing Terms

Information on any new or unfamiliar topic isn't of much use unless you understand the language. We have tried here to provide a basic glossary of the most often-encountered terms relating to Desktop Publishing. Most of these terms have been in use in the printing and publishing industries for quite some time, but in some cases they take on a slightly new slant when used regarding DTP. For fuller explanations on some of these terms, please see the referenced articles.

alignment—Position of a graphic, text or character relative to a horizontal or vertical line such as a baseline, guide or margin.

article—The complete document, including headers, footers, headlines, and the main body of the text.

ascender—The upper part of a font which extends above the x-height. See "Beginner's Guide to Desktop Publishing", page 18.

aspect ratio—The ratio of height to width of a graphic.

ASCII —A method of encoding text characters and numbers which is (supposed to be) readable and writable by all computer formats. ASCII stands for American Standard Code for Information Exchange.

attributes—Characteristics of text such as shadow, underline etc. The various attributes of the text make up the overall style.

backslant—A font attribute. Backslant is similar to a reversed italic.

baseline—The bottom of a text line; specifically the line on which upper case letters are placed.

bitmapped fonts—The same as screen fonts. Bitmapped version of a font, primarily for representation on screen. See "A Desktop Publishing Primer", page 27.

body—The main portion of text (also known simply as the text), exclusive of headlines, bylines, headers, footers, etc.

bold—A font attribute. **This line is in bold.**

byline—The author's credit, may be given at the beginning or the end of an article.

cap height—The height of a capital letter.

centered text—Also known as center justified text. Text which is centered in a given area but not aligned at the margins.

character—A letter, number or symbol.

color separation—The process of separating a color picture into its basic color components of cyan, yellow, magenta, and black for professional printing. This may be done either digitally or photographically.

column—A vertical area of text on a page.

Compugraphic font—An outline font from AGFA/Compugraphic. Similar to a PostScript font.

cropping—Reducing the size of a graphic by removing parts of that graphic.

cut & paste—The process of removing all or part of a text or graphic and replacing it in another position.

descender—That part of a font which is below the baseline. See "Beginner's Guide to Desktop Publishing", page 18.

daisywheel printer—See "A Desktop Publishing Primer", page 27.

document—The same as an article. Generally, refers to all parts of a complete story.

dot-matrix printer—See "A Desktop Publishing Primer", page 27.

download, downloadable font—See "A Desktop Publishing Primer", page 27.

double-underline—A font attribute.

dpi or dots per inch—A measure of printer resolution. See "A Desktop Publishing Primer", page 27.

flush justified text —Also known simply as justified text. Text which is aligned at both right and left columns or margins.

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flush left text—Also known as left justified text. Text which is aligned along the left margin.

flush right text—Also known as right justified text. Text which is aligned along a right margin.

folio—The page number of a text, which is usually shown in the header or footer; this often refers to the complete footer. See below: *Amazing Computing V5.2 © 1990*

footer—A line of text which runs through a document at the bottom of a page. May include such things as page number, date or issue number, author, title etc.

font—A type group of a particular type and style. See "Beginner's Guide to Desktop Publishing", page 18.

galley—A completed document not yet bound, used for proofing.

greeking—A method of using dummy text to replace actual text on screen. Speeds up screen refresh rate significantly. In some programs greeking is adjustable for text below a specified size.

gutter—The white space between columns.

hairline—The thinnest possible line.

halftone—Gray scale represented by dot patterns. Dots are set closer or farther apart to simulate darker or lighter shades of gray, respectively.

head or headline—A title at the top of a page, generally this is set in larger, bolder print than the body of the text.

header—A line of text which runs through the document at the top of a page. This may include such things as date or issue, title, author, etc.

impact printer—See "A Desktop Publishing Primer", page 27.

import—To bring text or graphics into your program from another source.

ink jet printer—See "A Desktop Publishing Primer", page 27.

italic—A font attribute. *This line is italics.*

justification—Same as flush justified text. Text which is aligned flush at both right and left margins.

kerning—The process of adjusting the spacing between letters.

kerning pairs—Certain pairs of letters which require special kerning to look correct, such as AV.

landscape—A horizontally oriented page layout.

laser printer—See "A Desktop Publishing Primer", page 27.

leading—The vertical spacing between lines of text.

left justified text – Same as flush left text. Text which is aligned flush along left margin.

ligature—A special combination of letters treated as one unit. For example:Æ

light—A font attribute. A slightly lighter, more closely-set style of font. *This is light italic* as opposed to *normal italic* or ***bold italic.***

line weight—The thickness of a line.

margin—Page or column borders.

masthead—A listing of the personnel who work on a magazine, periodical, or newspaper along with related business information such as addresses and phone numbers.

mirror—A font attribute. A font which appears to be placed over a mirror so that it appears along with its reflection.

normal—Same as plain. A font with no additional attributes.

orphan—A single line of text from a paragraph which is left at the top of the next column.

outline—A font attribute. This is an outlined font.

outline font – Different from above—the generic name of a Compugraphic or PostScript-type font. A structured font, infinitely sizeable without aliasing problems.

PostScript—A page layout description language trademarked by Adobe Systems, Inc. See "A Desktop Publishing Primer", page 27.

PostScript font—An outline font licensed by Adobe Systems, Inc.

PostScript printer—See "A Desktop Publishing Primer", page 27.

printer fonts—Font sets which include specific instruction for printing. See "A Desktop Publishing Primer", page 27.

ragged—Text edges which are not aligned to their closest margin.

resident fonts—Printer fonts which are contained in printer ROM or a printer font cartridge. See "A Desktop Publishing Primer", page 27.

reverse—A font attribute. Used over black or dark surfaces, this is a reverse font.

rotate—To turn text or graphics about a center.

sans serif—A font without serifs. See serifs, below; see also "A Desktop Publishing Primer", page 27.

scaling—Reducing or increasing the size of a graphic proportionally, i.e. while retaining its aspect ratio.

screen font—A bitmapped font for representation on a monitor. Same as bitmap (or bitmapped) font. See "A Desktop Publishing Primer", page 27.

serif—The small bars on the tops and bottoms of some letters. See "Beginner's Guide to Desktop Publishing", page 18.

shadow—A font attribute. **This is a shadow font.**

sidebar—An article-within-an-article. A mini-article which usually explains (in more detail) an aspect of the larger article it is placed within.

sizing—Reducing or enlarging the size of a graphic either proportionally (also known as scaling) or non-proportionally.

sizing squares—Small squares which surround a highlighted graphic on most DTP programs. These squares are used to size the graphic.

strike-through—A font attribute. ~~This is a strike-through font.~~

style—Used regarding text it is the composite of a font's attributes (i.e. bold italic). When describing a document it is a description of all the factors which comprise the design of the page. A template is a record of a page's style.

subscript—Text which appears somewhat below the baseline as in KG$_2$. Usually used in scientific and mathematical notation, this text is generally of a smaller size than the surrounding text.

superscript – Text which appears above the x-height as in E= mc^2. Usually used in scientific or mathematical notation. This text is generally of a smaller size than surrounding text.

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template—A basic layout style and design which is set up to be used for multiple pages or issues.

text—Type, as opposed to graphics or art. Also the main body of an article exclusive of headers. footers, headlines, bylines, folios, etc.

underline—A font attribute. This is an underlined font.

upside-down—A font attribute. As the name implies, a font which prints upside-down.

WYSIWYG—(What You See Is What You Get)—Refers to a program accurately portraying on screen what the printed output of a layout will be. Most DTP programs are WYSIWYG to some extent.

widow—A single line of text from a paragraph which is continued in the next column.

x-height—In any given font, the height of the lowercase letter x. See "Beginner's Guide to Desktop Publishing", page 18.

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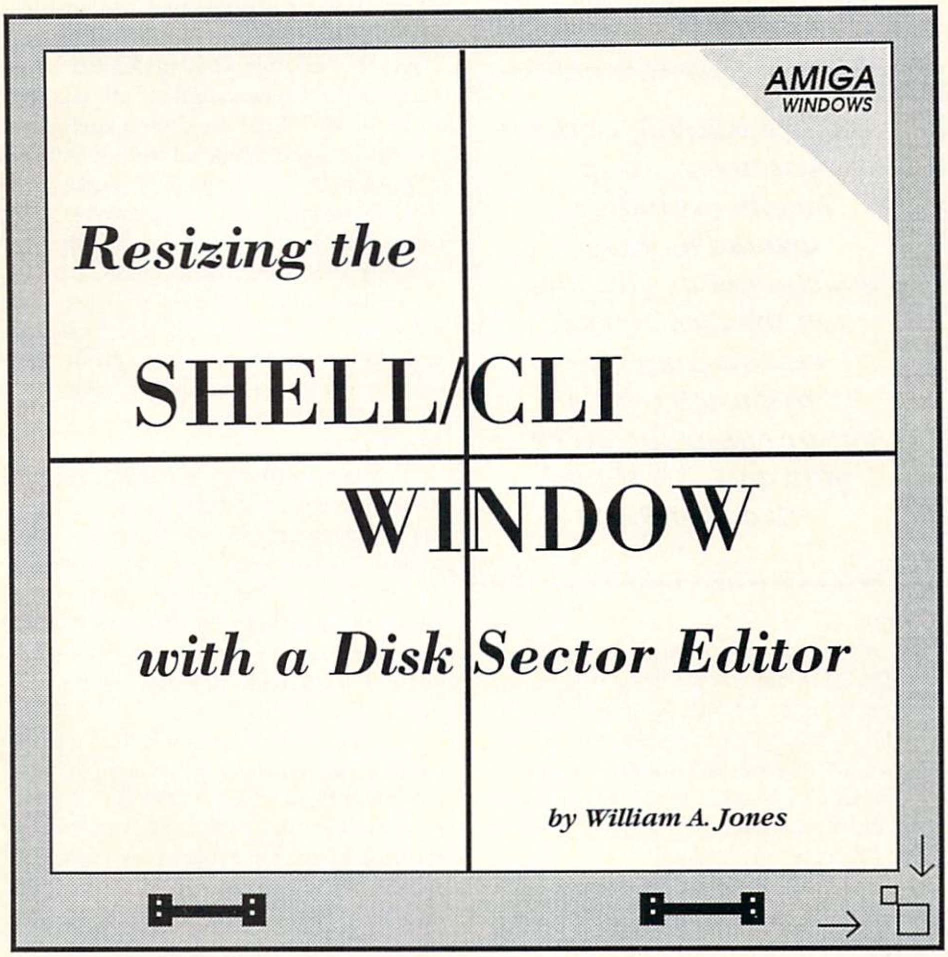

Resizing the SHELL/CLI WINDOW with a Disk Sector Editor

by William A. Jones

This article is an introductory tutorial on disk sector editing. It is a "hands on" article — heavy emphasis is placed on actually doing something useful with the editor, while being light on theory. For those who wish to delve deeper, references are included. The project is to re-size the default values of the Shell/CLI windows by making three sector edits in a couple of files. It is intended for people with no sector editor experience. For indivduals without a modem a couple of easy ways to get the software have been included.

Exactly what is a sector editor? It is a program that allows access and modification of individual bytes of data on a disk. The disk is read from and written to directly. This is a very powerful capability, and a great way to learn about disk structure.

THE PROBLEM

What inspired this project was a dislike of resizing the CLI window every time it was called. Along came AmigaDOS 1.3 with the answer on page two of the Enhancer manual. Or was it?

The instructions on page 1-2 of the AmigaDOS 1.3 Enhancer Software manual for changing the size of the Shell window do not work. At least not on my 500, with my current understanding of the English language. I'm a Southerner(y'all), so language might be the problem, but I suspect either a misprint somewhere, or my lack of the 1.3 ROM chip is the culprit. When I include WINDOW=NEWCON:0/10/480/190/Myshell in the Shell INFO window from the Workbench, nothing changes.

Using ED to include the same line in the s:shell-startup file yields the message "Unknown Command WINDOW" and no change. All possible combinations of upper/lowercase and spacing were tried, but to no avail. Giving the monitor a good stiff whack did not work neither. There is probably a simple answer to all this misery, but then I wouldn't have learned the following stuff about disk sector editors.

Which is what is needed to customize a Shell window. There are several good sector editors available in the public domain or as shareware. Two of the best known are Newzap and DiskX. Both are recommended, as they have different strengths.

Newzap 3.18 is a file-based editor. It is shareware and the price is right. The documentation is one page long and reading it is unnecessary for this project. However, it should be read. It is extremely intuitive; about ten minutes are required to learn how to run it. Since it is file-based the search time for a file is nil — this puppy is fast. And it runs under AmigaDOS 1.3, even though the version used only mentions 1.2. It limits use to the sectors connected to the file being worked on. Random roaming on the disk is not possible. For a beginner this is not a negative. Unlike most sector editors, Newzap displays the entire sector on screen at once. A small thing, but it contributes to that 'feel' of a good program.

DiskX 2.2 is a sector-based editor. It's by Steve Tibbett, of VirusX fame, and general good Samaritan to the Amiga community, and it is free! It requires ARP to run. The documentation is 3 1/2 pages; it needs to be read carefully. It is not intuitive. For example, hitting the return key is required BEFORE making an edit. It is more powerful than Newzap, in it ability to access any sector on the disk. This is a very useful feature to have. Boot blocks are available on DiskX. Search time is much slower. When a file is called, the search begins at the beginning of the disk and takes a while to find the file being accessed. The drive runs continuously while DiskX is in operation, which can be kind of disconcerting. Steve says not to worry.

To be fair, I didn't spend much time using DiskX. I just happened to try Newzap first, and it did the job with no hassles. It took some time to get DiskX online. Mix an old version of ARP and a 1.2 ARP loader with an overcrowded 1.3 Workbench. Stir in a lot of file copying and deleting, and the result is a frustrating afternoon. Ah, the joys of living 100 miles from the nearest users group. By the time this is read, ARP 1.3 will most certainly be available.

I wanted a "quick and dirty" tool for the job at hand. Newzap is quick but not dirty. It let me concentrate on the project, not the tool. For this project I recommend Newzap, especially for a novice at sector editing.

DISK STRUCTURE

Let's take a QUICK look at disk

organization. In descending order of magnitude the disk is divided into two sides, 80 tracks (laid out as concentric rings) per side, 11 sectors per track and 512 bytes per sector. A byte roughly corresponds to a character. For example, the word 'cat' would take three bytes on the disk.

A disk sector editor reads and writes directly to individual bytes of data in a sector on disk. To be strictly accurate, the Amiga reads and writes a track at a time, but that won't affect this project. The data is either in ASCII text (stuff that can be read with a text editor), or binary (stuff that appears as garbage in text editors that try to read it—some, like ED don't even try.) What is going to be done is, a few bytes in two files which contain both binary and ASCII text are going to be changed. Which is why the sector editor is needed, rather than a text editor. Thus ends the theory. (I did say QUICK.)

For an in depth look at disk structure, Amiga Programmer's Handbook Vol. II by Eugene Mortimer has a chapter on the trackdisk device. This is the low-level software interface to the disk drive, and the chapter provides much more information than needed for this project. It includes an informative picture of disk structure. The first chapter in the Technical Reference Manual portion of the AmigaDOS Manual has a chapter on the filing system with great detail about disk structure.

USE CAUTION

This is a good place for the standard disk editor warning. Do all work on a COPY of the Workbench disk. Actually, make that a copy of a copy of the Workbench disk that is normally used, if the standard Workbench has been modified. This is industrial strength hacking that's being done; it's easy to corrupt a disk. And I am definitely NOT referring to a hard drive here. I don't have a hard drive. I know next to nothing about them. Do NOT use this article as a guide. STOP! CEASE! DESIST! It's one thing to recopy a 3.5" floppy. Recovering from a hard disk crash is another. Well, if it must be tried, go ahead. It might work! Good luck, and don't blame me.

THE SOLUTION

O.K. Let's get our hands dirty. Here is a step-by-step walk through for changing the size of the Shell. These instructions are specifically for the Newzap editor, and apply to both one or two drive systems. If a different editor is being used, the information needed is included further down in the article.

1. Boot a copy of Workbench and double click the Workbench disk icon.
2. Load and run Newzap.
3. Click the Filespec box.
4. Enter 'df0:system/cli' (no quotes) and hit return.
5. Select String Search from the search menu on the menu bar.
6. Enter 'newcon:' (no quotes) and hit return.
7. On the right side of the screen you'll see NEWCON: highlighted. Click on the '5' (3rd character after NEWCON: and type '10/480/190/Myshell' (no quotes) and two spaces to overwrite the two l's from the old 'Amigashell'). Do NOT type past the end of the old 'Amigashell'.
8. Click the save gadget.
9. Click the back gadget to get to the Workbench and double click the Shell icon.
10. Yell TA DAA!!! Type 'endshell' (no quotes) and hit return

Picture yourself at the next user group meeting standing around looking nonchalant as you toss out the line, "I was customizing my Workbench with a sector editor the other day and..." Instant wizard status.

If the Shell is going to be called from the Workbench that's all there is to it. However, if the CLI needs to be the same size, click the Workbench back gadget, find the word CON: (it's the next word past the edit just made) and change the dimensions and name like step 7. Repeat steps 8-10.

Now double click the shell icon. When Myshell appears type 'newshell' (no quotes). As we say down South, "Ids jes one dam thing afta anutha." Since you are now a veteran sector editor guru, fixing this one is easy. Just do the same steps on a different file. Back to the sector editor: In step 3 enter 'df0:c/newshell' (no quotes.) Then repeat the rest of the steps, and type 'newshell.'

If a different disk sector editor is being used, here is the needed information. The file 'df0:system/cli' is six sectors long. The text being changed is in sector five. Similarly, the file 'df0:c/newshell' is six sectors long, and the text is in sector three.

The Enhancer 1.3 manual is correct here. The first two numbers determine where the window will appear on the screen. The 1st number (the one we didn't change) is the # of pixels from the left edge of the screen. The 2nd number is the # of pixels from the top. The 3rd number is the width of the window, and the 4th number is the height of the window. Experiment with these to put the Shell window where it is wanted. The numbers I used put a window about 2/3 of the screen wide, (the disk icons can still be seen) and the height of the screen minus the top menu bar.

The maximum height appears to be 200 (10 + 190.) If this height is exceeded, it will not work. The same problem may exist, if 640 is exceeded for the width.

CLICKDOS

The hardest part of customizing the Amiga interface is finding the files to edit. Some suggestions: look through the C, libs, prefs and system directory files for strings of ASCII text. The sector editor or a directory utility, like Clickdos, can be used. Clickdos lets you roam through directories and subdirectories on a disk with a few quick mouse clicks.

For example, the way I found the CLI file in the system directory referred to back in step four is as follows: Click the 'iconify' gadget. This causes the small window on the Workbench menu bar to expand to full screen size. The screen displays two directory areas. Click the DF0: gadget beneath either area. This displays the contents of the disk, directories first. Click on the system directory, then click the 'child' gadget. This displays what's in the system directory. Click the CLI file. Click the TYPE gadget. Click the screen requester, (gee, I wonder why it's called Clickdos) and you are looking at...gibberish. Clickdos reads binary as well as ASCII. Click anywhere on the screen. Eureka! There are the lines to alter. This takes less time to do than to describe. A couple of hours with Clickdos and you can go through every file on the Workbench.

Clickdos also has the ability to copy, move, makedir, delete, rename and call a CLI. Copying is particularly easy. It also views IFF ILBM pictures. Be sure to read the

(continued on page 66)

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Who! What! When! Where!

review by Mike Hubbartt

Disorganized? Disoriented? Distraught? This may be the program for you.

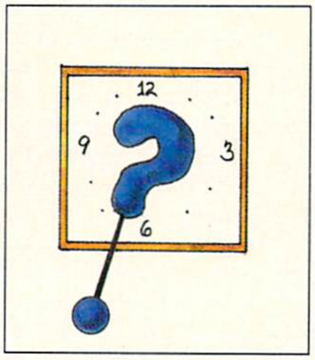
How many of you have that "perfect desk" at home or work? You know, the one where anyone (secretary, spouse, or friends) can easily find important information, like phone numbers or your list of important appointments for the day. If so, you are fortunate! I keep trying, but I have had little success in keeping my desk organized in a manner understood by anyone but myself. Blue Ribbon Bakery has a product called "Who!What!When!Where!" (from now on referred to as WWWW), that insures the gratitude of any other person needing to find your important personal information when you are not around to help them look for it.

WWWW acts as a personal secretary, keeping track of important names and numbers for scheduled appointments and an itinerary of important things to do. This program displays information in separate windows for the Calendar, Directory, and Things To Do in a manner similar to WP Library. A timer, which is run from the startup-sequence to notify users of upcoming appointments, monitors the system clock. Since WWWW multitasks, it sits quietly as an icon.

PERSONAL DIRECTORIES

Up to 14 different people can share WWWW on a single Amiga, with each individual having a private password to protect his directory's information from spying eyes. Sharing information between different users is easy, with each user selecting how much they wish to share!

Each directory has two smaller windows within it: one is a form displaying name, address, city/state/zip, phone number, birthday, groups, and notes for people — you fill in the blanks. The second contains the list of file names (like the index for a card file), which contain the information needed to fill in the blanks for the form. The data files for individuals are stored where you choose, on any floppy disk or hard-disk drive directory.



Each person/business in a directory list can have individual appointments. View a list of appointments for the person/business currently displayed in the window, or appointments with others not currently displayed. If a person does not have any individual appointments, none are displayed when selecting APPOINTMENTS WITH.... However, selecting APPOINTMENTS WITH UNLISTED will display a list of all appointments accessible within this directory.

THE CALENDAR

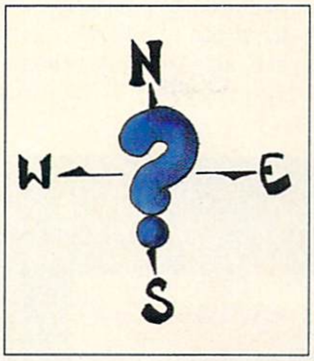
The Calendar displays either Appointments or a Things To Do list for each day of any month. To select which list you want displayed (either Appointments or Things To Do, but not both at the same time), click on the appropriate gadget at the top left corner of the calendar. To change months, hold down the right mouse button and select the month you wish to be displayed. To view the list for a specific day, simply click on that day and your Things To Do or Appointments list will appear. Appointments are viewed for either one or all of the users. The displayed list is sorted in either alphabetical or chronological order of appointments. If an appointment repeats on a regular basis (daily, weekly, bi-weekly, monthly, or yearly), it only needs to be entered once. A list of Appointments can easily be sent to the printer.

THINGS TO DO

The Things To Do window displays What, When (time and date), New, and Delete gadgets. The list of Things To Do is automatically rolled over to the next day if you do not check it off your list. This is a very useful feature for all those procrastinators out there! A list of Things To Do can also be sent to the printer, if you have the need for a hard copy list. I keep track of Amiga magazines and software publishers with WWWW and use the Things To Do as a reminder to mail out an article or write/call a company about a product. Click on the checkmark for an item when it's completed, and it will no longer roll over to the next day's list of Things To Do. I check the Things To Do whenever I want to see what I need to catch up on.

WWWW ships on a single unprotected disk, although manual protection is used. Installation for the program is simple; just use the Install requester to set up the location for all data files. One thing I would emphasize is to make sure the run wwwwtimer in the s:startup-sequence comes after SETCLOCK, or you will have problems with the copy-protection scheme, which is date-sensitive. The WWWW Alarm can either use a bell, a voice, a sound effect, a screen flash, a message sent to an ARexx port, or any combination of these. Yes, WWWW is ARexx-compatible!

The manual gives adequate coverage of the use of the program and all its features, but I would have preferred a spiral-bound manual. A bound manual makes it hard for frequent manual readers to keep open to a specific page while working with the program. This objection with the manual is my only major complaint with this product, although I also wish the WWWW program itself was smaller than 133K—it takes up a little too much space on a single disk drive system! The price is quite reasonable for this type of product on the Amiga. I use WWWW nearly every day and can heartily recommend it to most people, especially businesspeople and students who need to keep track of important engagements without the hassles of either easily misplaced notes or appointment books.



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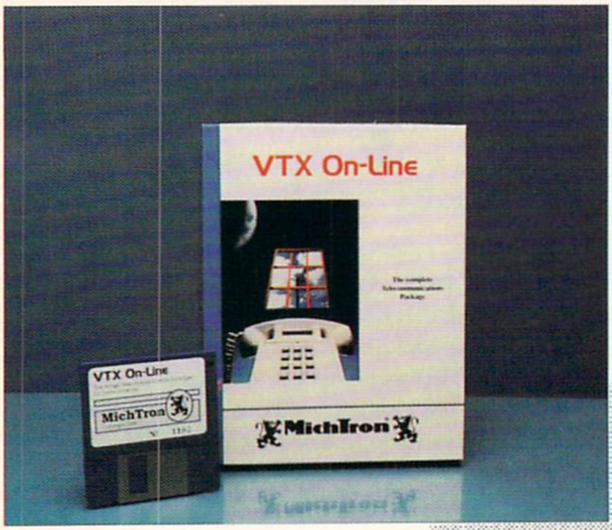
VTX On-Line

review by Cole Calistra

Modems are in high demand on the Amiga, and so are the high-quality terminal software programs used to operate them. VTX On-Line has some very advanced features for a terminal program, which allow the user to communicate easily with a variety of systems. Unfortunately, it falls short in some of the more common features found in most terminal programs.

VTX On-Line is just one of the many players in a well rounded market of commercial, shareware, and public domain programs. It has no features that place it far ahead of any other program on the market, but it definitely has some features that make it worth looking at, particularly for a variety of different specialized applications. VTX On-Line's main problems are that it is best suited only for those specialized applications (as opposed to general telecommunications work), and it is very buggy.



One of VTX On-Line's strong suits is its ability to communicate with mini computers such as Digital Equipment Corp's VAX and a host of various UNIX machines. VTX On-Line accomplishes this through its variety of file transfer protocols and emulations.

VT-100?

Most terminal programs tout true VT-100 emulations, but most of them, including VTX On-Line, miss out on a few key features. VTX On-Line, however, has an almost complete VT-100 emulation. It supports the standard codes to relocate the cursor along with a host of other features that are not usually emulated, such as double width and/or height characters. VTX On-Line even emulates a code that DEC engineers use to do diagnostic work on real VT-100 terminals. Unfortunately in my tests, I was unable to get the graphic characters that are used on a VT-100 to work correctly. Even though the other features in the VT-100 emulation work great, this setback makes it hard to use in place of a real VT-100 terminal.

VTX On-Line has other emulations besides VT-100. It supports ANSI emulation for use with a bulletin board system (BBS), Tektronix-4014 emulation for certain mainframe, mini and supercomputer applications, and Prestel emulation which is documented to be useful to European users. I was unable to test Prestel and Tektronix emulation because they are not in as widespread use as VT-100 and ANSI. VTX On-Line did a fine job of displaying the colors in the ANSI emulation, but did not fair well at all when it came to displaying the graphics characters or positioning the cursor in accordance with the ANSI standard used on many IBM and Amiga BBS's.

FILE TRANSFER

As far as file transfer protocols go, VTX On-Line touts ASCII, Xmodem, Xmodem CRC, Xmodem-1K, Ymodem, Kermit, and CompuServe's B Protocol. The protocols all work excellently and get fairly efficient throughput speeds. The Kermit protocol offered is very useful in conjuction with some of the emulations, particularly when you are communicating with UNIX based machines, the Digital Equipment Corp's VAX, and many mainframes. All of this is well documented in the manual, which is extremely well written and one of the best manuals I have seen for this type of program.

A feature of VTX On-Line that I did not particularly care for was the requesters used in the program. The author's intention to make all the requesters controllable by either mouse or keyboard was a very good idea, but in reality it leads to confusing operation and a loss of functionability in the requester. For instance, the file requesters do not allow you to double click on a file name to select it and then exit the requestor. There is also no way to activate the OK and CANCEL buttons from the keyboard. While this may not seem like much, it makes having keyboard activation a waste since you need to go to the mouse anyway to exit the requester. The requester also crashes the system when an invalid directory name is selected. I also found a few other bugs in the requester, when using the keyboard that, I am told will be fixed in the next version.

THE PHONE BOOK

VTX On-Line also has a phone book where you can enter the names and numbers of popularly called services. You are also able to assign a different configuration and script that is automatically loaded each time you dial that number, which is an extremely useful and time saving feature, since you do not have to reconfigure all the terminal preferences everytime a certain number is dialed. Since each entry in your phone book may have a different setting, you can easily see what a pain life would be without this feature. One of the flaws with the phone book is that you cannot click on multiple entries and have them dial consecutively until a connection is made. In fact, you can't even double click on a phone number to dial it. There is also a problem with the cursor advancing to the next line when you are entering a new phone number. The program doesn't even hang up the phone if you click cancel. This can be very aggravating if you start dialing a long distance number and just as it begins dialing you remember it's the wrong number. Theoretically, you should be able to click cancel and it will hang up during the dialing, saving you connect charges, but in reality VTX On-Line does not hang up the phone, possibly costing you money.

THE BAD NEWS

I have some other minor qualms with the package. For example, it reassigns the fonts to the VTX On-Line disk and never assigns them back to where they were originally. This can be very annoying to hard disk users. It also has a strange bug in the cursor (when using inverse video) where the cursor leaves trails on lines where return was typed. The program also lacks a review buffer such as that found in many popular terminal programs. This allows you to go back and review things that have gone off the screen in case you missed something. The most peculiar bug I found is that there is a drawer full of demos for VTX On-Line that would not run no matter what I tried. The demos drawer was not mentioned in the manual and may have been just left out of the program.

THE GOOD NEWS

VTX On-Line has the ability to receive and display pictures in the RLE or GIF formats. RLE graphics are used on CompuServe to display and transmit pictures while online. GIF graphics on the otherhand have a far greater use. GIF graphics are able to be displayed on the Amiga, the IBM, the MAC, and it is even rumored to be available on the Commodore 64. This is useful if you have more than one computer, or if you want to draw something on an IBM at work and download it to your Amiga at home so that you can touch it up with an Amiga paint program. VTX On-Line goes so far as to even display 256 color pictures created on a MAC II in HAM mode on the Amiga.

Another nice feature of VTX On-Line is its ability to communicate with and be controlled by ARexx. In case you have been asleep for the last year or have just purchased an Amiga, ARexx is a powerful macro processing language that allows many programs, with the proper interface written into them, to communicate with each other, and they are able to be controlled and reconfigured by the user. This allows the user to customize the program to their liking, and also to write scripts that interact with multiple programs. Having this ability in a terminal program greatly expands the possibilities that can be achieved using ARexx.

Probably the best feature of VTX On-Line is the ability to write automated scripts. It is possible to write a script that dials your favorite BBS or service, logs in, reads your mail, gets a list of the newest files, and then logs off. This allows you to save time and money, if you have the script automatically start at night when the long distance or network connect charges are lower. The script language allows you to perform any available function automatically. There is also a "learn mode" where you can log onto a service, such as a BBS, and VTX On-Line will make up a script for that BBS as you go along and then save it to disk. Unfortunately, this feature has its bugs also. The first one is minor but annoying: the gadget to cancel the script does not respond to one click. It needs two clicks before it will activate. The second is not so minor. Hitting return after cancelling a script will cause the program to crash, resulting in a GURU.

THE FINAL WORD

While VTX On-Line has many features, it also suffers from many bugs. It is a very good package for what it does, but it is easily out performed by some of the better public domain packages available for free on commercial networks and bulletin boards. The program should be very useful, not to mention powerful, once all the bugs and peculiarities are straightened out. I contacted Michtron about the bugs and about some of the features that I thought were missing. They said that they were trying to fix the bugs quickly, but they didn't know whether or not they would add in any of the features (that I thought should have been in there in the first place), such as a hang up key.

•AC•

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0726-68020

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Roomers

by The Bandito

[The statements and projections presented in "Roomers" are rumors in the purest sense. the bits of information are gathered by a third-party source from whispers inside the industry. At press time, they reamin unconfirmed and are printed for entertainment value only. Accordingly, the staff and associates of* Amazing Computing™ *cannot be held reponsible for the reports made in this column.]

While the Bandito is rarely startled by the data that flows by on the bit stream, occasionally an item pops up that jars even the Bandito's complacency. Some determined hackers have cracked the AMAX code and posted the entire thing (Apple ROMS and all) on some BBS's. So this means there is no need to have the AMAX hardware with this software; you just run it, and the Amiga is then ready to run Macintosh software (all the ROM calls are diverted to the "ROMs" being simulated in memory). The Bandito strongly advises everyone to stay away from it. If this gets out, two bad things will happen. First, ReadySoft will have no incentive to make further improvements in AMAX (like hard disk support). Second, Apple Computer would have grounds for a lawsuit, possibly even an injunction against Commodore to make them stop selling Amigas! This is serious. Right now, Apple has the FBI investigating the pirates who were distributing some of Apple's source code to the ROMs. It is important that loyal Amigans know about this and squash it hard before it ever gets out.

Legal Battles

The lawyers have been extra busy lately, so the Bandito brings you an update. Atari Games has lost the fight over Tetris; Nintendo gets the rights to the cartridge version. No resolution yet in the big battle over Nintendo cartridges, but the latest development bodes ill for the Nintendites. Now a Congressional subcommittee has asked the Justice Department to investigate Nintendo for monopolistic practices, which could mean some legal action from the government against Nintendo and perhaps a glorious victory for Atari Games. One of the things that got the Congress so fired up is that Nintendo machines sold in the U.S. contain a chip that's sole purpose is copy protection, preventing non-authorized cartridges from working (Tengen, an Atari Games' subsidiary, was able to create a cartridge that ignored this chip!). What really teed off the committee was that Nintendo machines sold in Japan do not have this chip.

Personally, the Bandito still hopes the Nintendo craze dries up and blows away so that developers can spend their time working on more Amiga games. But everybody salivates at the thought of selling 500,000 cartridges per title instead of 50,000 disks for a successful game.

And in the very latest in legal maneuvering, Xerox is now suing Apple for $150 million over the copyright to the Macintosh look and feel. Seems Xerox wants to get Apple's copyright declared null and void. Why did they wait so long? This lawsuit makes Apple's case against HP and Microsoft look pretty funny. In one courtroom, Apple argues that they own the copyright to the look-and-feel, and in the other, they claim that look and feel can not be copyrighted. What is the Amiga angle on this mess? Well, Xerox is already getting royalties from Sun and Metaphor, and Apple balked at paying up (even though the fees are rumored to be quite reasonable, as these things go). Speculation is that Commodore has been approached, but no word yet on whether or not they will pay the royalty that Xerox demands. The Bandito is already putting out sensors to find out the real story. Stay tuned.

Other Game News

Commodore is poised to make its entry with a splash. The game machine based on Amiga chip set is almost ready, and reports are that it will be a killer. It is basically an A500 without the keyboard and most of the ports, adding a cartridge port and (the big news) a CD-ROM player option. Key developers are already working on products, which in many cases are easy (especially for many of the European games). Commodore has decided that there is money to be made there, so development has kicked into high gear. The CD-ROM player option is the most exciting part. Unless Commodore is totally brain dead, they will also offer the CD-ROM player as an Amiga option (since the game machine uses the Amiga chip set). Think of the kind of games you could have – there is room for 10,000 lo-res images plus an hour's worth of digitized music.

The plan makes sense to the Bandito, even though there's already two advanced game competitors out there (the TurboGrafX and the Genesis) with Nintendo's 16-bit machine on its way. The Amiga's sound and graphics capabilities are still far better than any of these machines, and the Amiga also has what these machines lack: a huge base of software. Developers are already working on porting their game software to the cartridge format, which is not too hard in most cases. The Bandito hears that Commodore has settled on 512K RAM as the standard, and there may be an option to increase this to 1 megabyte. The price point on the machine is said to be around $200, with the CD-ROM player an additional $300.

You can also expect a lot of Amiga games to become Sega Genesis cartridges and vice versa. Why? Because both machines are based on the 68000, and porting the code is very easy. The TurboGrafX is a fast 6502, which is much less compatible.

Will we see a cartridge port on a future version of the A500? If the video game is a success, it could be in the Amiga's future. Or possibly a low cost adapter that plugs into one of the existing ports would do the trick. Hey, that sounds like a product opportunity for some enterprising developer.

Expo Europe

The Bandito's spies are everywhere, even in Europe. They report that over 30,000 people attended the Amiga '89 show (AmiExpo) in Cologne, Germany. Friday alone was busier than the busiest day of any AmiExpo in the U.S. By Saturday noon the show was packed solid, and 10,000 people were waiting to get in. A riot nearly started when people were turned away. Several developers were overheard to mutter "why can't the shows in the states be like this?"

The other eye-opener for the Americans at the Cologne show was the amount of piracy going on (not at the show, but there was plenty of evidence to be found). Software sales in Europe are not anywhere near what they should be, given the amount of hardware that Commodore is moving. Add-on Amiga hardware sales are doing fine, but software is not. According to developers, piracy is rampant in Europe. It is even supposedly condoned by some Commodore officials in West Germany, who privately express the opinion that if it were not for all the "free" software, people would not buy as many Amigas. This attitude makes software publishers turn at least 32 different colors.

In other show news, Commodore's big announcement at Comdex (where they looked lost among the sea of IBM clones) was the long-awaited A2630 card, offering a 25 MHz 68030, a 68882 math coprocessor, and 32-bit wide RAM. They have built it into a 2500 chassis and are calling it the A2500/30. This is NOT the Amiga 3000, sports fans. But it is a screamingly fast machine — two to three times faster than a 2500. Almost makes rendering Sculpt images quick...almost. Of course, you can always buy the card and slip it into your own A2000 for some supercharged performance. The A2630 supports up to 64 megabytes of RAM. Just THINK of all the different programs you could have running at once!

Amiga Homefront

Some dealers are not happy with the Commodore ad campaign because the sales boost they got is lower than they expected. But computer sales of all brands were sluggish this Yuletide. Buck up, folks. The Amiga's doing better than most.

Crabapples

Apple has had a tough time lately. First of all, despite an expensive marketing push, Apple is finding it very hard to sell products to the video market. Macs are too slow with animation and have bad video output, even after you spend thousands on adapter cards and boxes. And the software selection for video titling and animation is pathetic.

Apple stock has taken a beating lately, since they have been hit with the Xerox lawsuit, and they revealed their Xmas sales were well below expectations. Their stock has dropped 15% in about a week. It seems that their unit share has dropped down from 15% to a mere 5%, and sales of the Apple II line (which accounted for most of their units, though not most of their profits) have also slowed. The Bandito has discovered that total Apple II line sales for 1989 are less than 100,000 units worldwide – that's including IIe's, IIc's, and IIgs's.

So Apple is trying to revive their share of the home and education markets with the Cheap Mac. Basically, it will look just like a Mac SE, with a retail price of less than $1500 (perhaps $995). So what is the big deal? By that time, you will be able to get a comparable A500 system for well under that price, and you have got color, stereo sound, multitasking, and more. The Bandito predicts that the LCM will be a flop unless they can come up with another gimmick. Ooh, they are also talking about a color Macintosh SE for a list price of $2000 (without the monitor). Amazing, a color computer for about $2500 (that is with a color monitor and one disk drive) – what will they think of next?

Where is the Beef?

Apple's not the only computer company having a problem lately. Atari is having trouble bringing the Lynx handheld video game to the market. Citizen has raised the price of the LCD screens, so Atari will either have to raise the retail price of the Lynx or take a lower profit margin. And apparently the entire development system was not transferred to Atari before they lowered the boom on Epyx, though they are trying hard to get it finished at Atari. Despite a good turnout at the developer's conference Atari held in California, rumor has it that nobody is working on Lynx development outside of Atari. What is left of Epyx would dearly love to get the royalties from the Lynx, but the people who knew the most about the development system are no longer at Epyx to help Atari understand it. And Atari would love to put the development system on an ST instead of an Amiga, but that may be damn near impossible. What a mess. Meanwhile, Nintendo's Lame Boy is zipping off the shelves, propelled into high gear by a megabucks advertising campaign.

And then there is Big Blue. The Bandito hears that IBM's HPC is reaching some developers under very tight security. IBM regs call for locked drawers, all equipment locked up in very secure locations, documents marked Top Secret (Burn Before Reading), and so on. They enforce this with surprise inspections and a sneaky trick: every developer gets a separate code name for the hardware, so if leaks occur IBM knows where to look. IBM is working hard to get some applications ready for shipment of the system — education and recreation are both important target areas. The Bandito has sifted the evidence and believes that IBM is looking for a Christmas 1990 ship date; however, they may be forced into a first quarter 1991 ship due to hardware and software availability problems. The latest price quote: $3,000 for the machine.

Microsoft's interest in multimedia may prompt them to reopen discussions with Commodore about software products. The Amiga could be a test-bed for some of their new ideas, especially since it looks like Microsoft's vision of a multimedia MS-DOS machine (the HPC) will be too expensive for a couple of years to create the kind of large market they need. So they are looking at the Amiga's installed base of over 1 million (probably 2 million by the end of 1990) with a speculative eye. The Bandito says why not? Just do not give us an operating system. We already have all the neat stuff you are trying to put into OS/2, and Intuition takes a little less than 4 megabytes to run in. We would not mind another word processor or spreadsheet, though. Work on it and get back to us when you have something.

•AC•

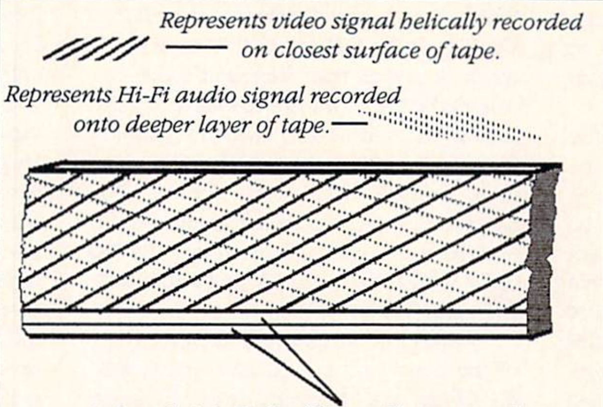
•How High is Hi-Fi?•

The facts about audio for video!

by Barry Solomon

Well, hello again. I was thinking the other day about what to write for this month's column. I was stuck for a little while, so I began reading a new book that had just come into the AC office for review. The book is entitled *Amiga Desktop Video* by Steve Anzovin. There I was reading along when I spotted a reference to something that has become one of my pet peeves.

The reference was to the Hi-Fi sound feature on a VCR. The reference was neither incorrect nor, I am sure, was it intentionally misleading. But it made me crazy nonetheless. The fact is that most people (including most audio/video salespeople and even some desktop video pros) do not really understand Hi-Fi VCR sound.



Represents video signal helically recorded on closest surface of tape.

Represents Hi-Fi audio signal recorded onto deeper layer of tape.

Left and right Dolby ("linear") stereo tracks **or** *mono (monaural) track—recorded across full width of soundtrack area.*

JUST THE FACTS

First of all, let me clear up the first misunderstanding. I am talking about what is known on some Beta and some VHS VCR's as Hi-Fi sound or Hi-Fi Stereo sound. This relates to your home stereo system only indirectly; through the original usage (circa the early 1950's) of the term Hi-Fi which was short for High Fidelity.

Hi-Fi referred to the (then) new generation of recording and playback equipment which was finally able to reproduce music throughout the entire range of human hearing (20 to 20,000 cycles per second; now referred to as Hertz). For you youngsters out there, remember, this is still almost ten years before stereo became widely available!

When consumer VCR's first became available, only monaural (mono) sound could be played back and recorded. The quality of the mono soundtrack was (and still is) pretty poor. Remember, when recording anything on tape, be it audio or video, the faster the tape passes the record or playback heads, the better the sound is. It should not take a degree in engineering to understand this.

If a tape is moving by the record heads at one inch per second, and you record a one-second note, then you have a one-inch long "description" of the music on tape. If you record that same one second of music with the tape running at two inches per second (ips), then your "description" is now two inches long. Get it? The longer the "description" the more accurate it can be. Try describing your house in three sentences. Now try it using six sentences. Odds are, I will pick up a lot more information about your house from the second description.

If you know only the most basic technical facts about a VCR, you know that the video is recorded and played back by using record and playback heads which are mounted on a rotating drum. This is done to increase the tape-to-head speed. In the case of video, this was not done to increase the fidelity. It was done to make recording possible! Video signals are so complex and cover such a wide bandwidth that they cannot be recorded at the speeds of standard consumer audio equipment.

They could have just worked out a way to have the tape move very fast across a stationary head, but you would have had to change video cassettes every five minutes or so. (You would have needed a shopping basket to get Gone With The Wind from the neighborhood video store to your car.) So the tape moves slowly, and the drum with the heads spins madly away to get the required speed. Where does the audio portion come in? Well, the mono audio track was and is recorded along a narrow strip on the edge of the tape by a stationary head. Remember, the video tape is actually crawling past this stationary audio head. The speed is actually somewhat slower than the speed of an audio cassette deck. The sound, therefore, is not too good.

DOLBY STEREO

In the early 1980's some VCR manufacturers began producing machines with "Dolby stereo". This was a system by which the mono soundtrack was divided into two sound tracks, left and right, for stereo. Now we had this extremely slow-moving, extremely thin strip of sound-on-tape divided in two! As with faster speeds, fidelity is usually better, if there is more area on which to record. So now we finally have the possibility of a stereo soundtrack, but the drawback is excessive noise.

This is where the Dolby part comes in. These machines incorporated a system of noise reduction licensed from Dolby Labs, Inc. very similar to the "Dolby" on your average audio cassette. So now we have a VCR which can record and playback stereo sound. This was a major advancement for the home video industry. First of all, since we all have two ears, located (preferably) on either side of the head, we tend to hear our normal environment in stereo (Actually, what we perceive is binaural sound, but it is pretty much the same idea.) This means that stereo sound of any quality tends to sound much better and much more natural to us than mono sound of comparable quality.

Secondly, in case you have not noticed, movie makers have been spending more time, effort and money creating the soundtracks for their movies. In fact, for the movie Indiana Jones and the Temple of Doom, which was filmed almost five years ago, the producers spent over $5 million on the soundtrack alone!!

So here, at last, we have a way to convey some of the impact of a movie's music and sound effects in our own homes. The difference, compared to mono sound is astonishing. In fact, I was one of the many people who immediately ran out and

video Schmideo

bought a Dolby stereo VCR. Of course, when this feature was new, only the top-of-the-line models had it. So that was what I was forced to buy in order to get better sound.

The problem was that, as nice as this improvement was, the fidelity was still pretty poor. The average specifications (specs) for Dolby stereo on a VCR involve frequency ranges of about 100 to 10,000 Hz. Better-made machines will occasionally offer frequency response as high as 12,000 Hz. If you are not an audiophile I will remind you that you can hear from about 20 Hz to about 20,000 Hz if your hearing is normal.

HARMONICS

Obviously, Dolby stereo misses quite a lot of possible sound. Now, there are no musical instruments that will be "invisible" to your ears because the primary sounds of most instruments do not really reach into that range. Nor are there opera singers, singing at 16,000 Hz, whose voices you will not hear. For the most part, the frequency range from 12,000 Hz to 20,000 Hz is the range of "overtones" (harmonics). (If you are an audiophile or a musician, please bear with me.) Harmonics and overtones do two basic things for us. They tell us where the music or sound is, and they tell us (pretty much) what or who is producing the sound.

When we hear a sound, our brains tell us the approximate location of the source of that sound by automatically comparing the different versions of the sound as they reach us. When a sound is produced in front of us, we sense that sound directly, as it reaches our ears. We also hear how that sound bounces off of our surroundings (the ceiling, walls, floors, the person sitting next to us, etc.). In almost any environment there will be some continued bouncing as the sound bounces back and forth, between several surfaces, before reaching our ears. This is called reverberation. Our ear/brain combination is so sophisticated that it can discriminate between reverberations as small as a millisecond (one thousandth of a second). Our ears can also sense when a sound is stopped (literally, absorbed) by our surrounding surfaces. I am sure, if you close your eyes, you can imagine the difference between sounds in a small, relatively "dead" room (wall-to-wall carpet, overstuffed furniture, low ceilings) and the way things sound in a large "live" or "hard" room, such as a gym, church or auditorium. In some ways, the higher the sound or harmonic, the more it tells us about the position of the source and our environment. In fact, the reverse is also true. Our ear/brain combination cannot locate the source of sounds below 100 Hz.

The fact is that most people (including most audio/video salespeople and even some desktop video pros) do not really understand Hi-Fi VCR sound.

Now, as far as what or who makes the noise: imagine, you and your significant other sing the same note. How can I tell whose voice is whose? A guitar and a piano play the same note. How can I tell them apart? It is the harmonics produced by our voices, by instruments, by anything that makes a noise, that tells us who or what the noisemaker is. Hearing the complete harmonics produced by a voice or instrument enhances the pleasurability of the listening experience immeasurably. It is one of the major factors which make a difference between listening to a cheap portable radio and a fine stereo system.

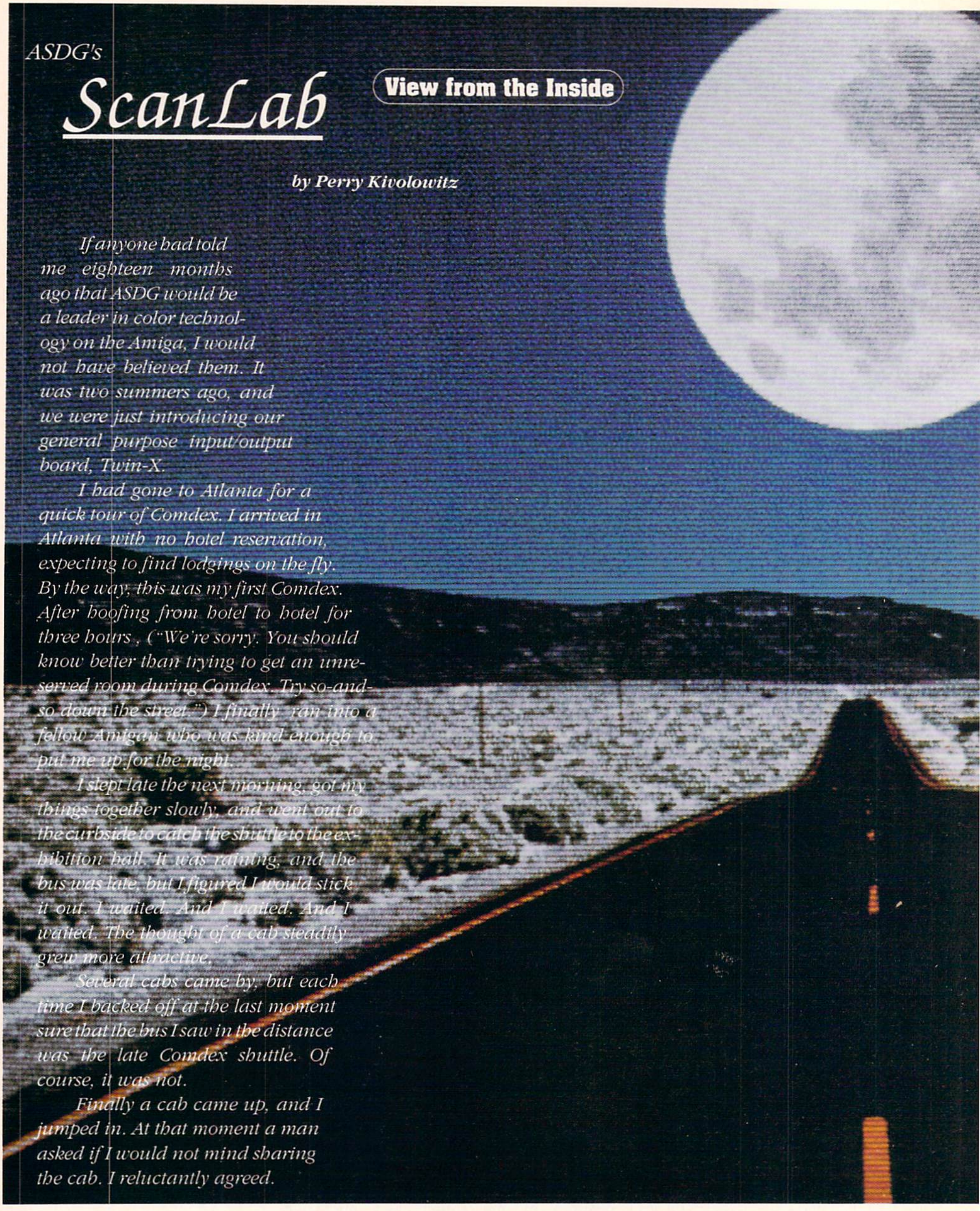
There is also a third factor which affects our perceptions: those "lost" sounds below 100 Hz. Louder sounds of approximately 100 Hz and below are not only heard, but felt. This enhances the realism of sound effects and music considerably. We usually do not even notice that we feel the sound unless it is extremely loud, but we do feel it. (If this interests you, you might want to check out a book on psychoacoustics.)

But I digress...So here we are with Dolby stereo. It is a vast improvement over mono, but it is still not like in the theaters. What we need is a way to improve the fidelity, or accuracy, of the sound. (By the way fidelity is from the Latin *fidelitas*; meaning faithfulness.)

A GOOD IDEA

So it came about that some very clever engineer, thinking back to the equation, greater speed + larger recording

(continued on page 70)



ASDG's

ScanLab

View from the Inside

by Perry Kivolowitz

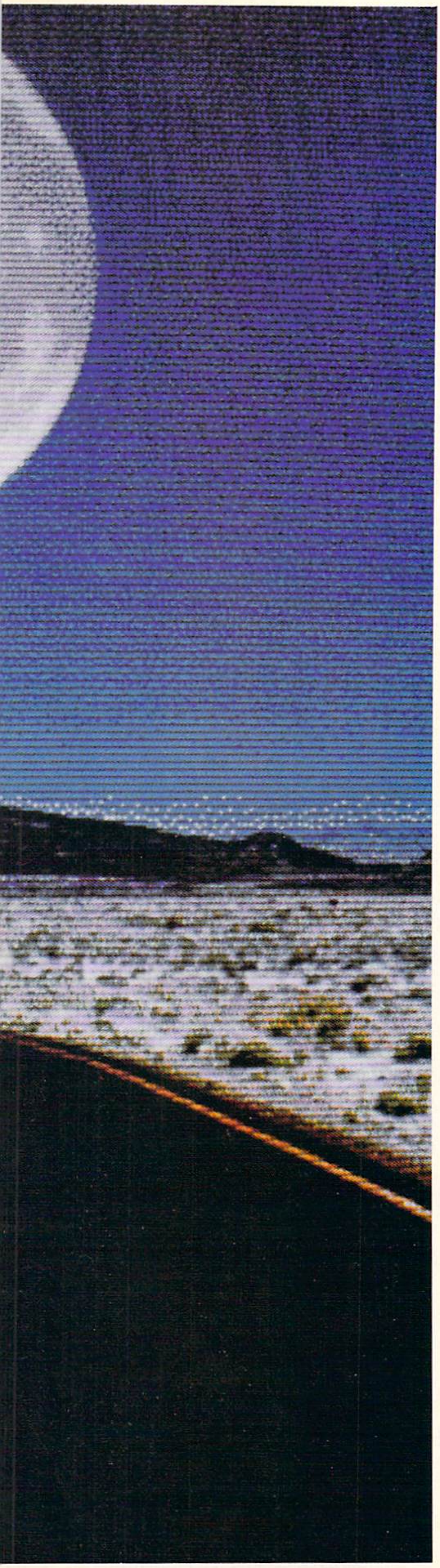
If anyone had told me eighteen months ago that ASDG would be a leader in color technology on the Amiga, I would not have believed them. It was two summers ago, and we were just introducing our general purpose input/output board, Twin-X.

I had gone to Atlanta for a quick tour of Comdex. I arrived in Atlanta with no hotel reservation, expecting to find lodgings on the fly. By the way, this was my first Comdex. After hoofing from hotel to hotel for three hours, ("We're sorry. You should know better than trying to get an unreserved room during Comdex. Try so-and-so down the street.") I finally ran into a fellow Amigan who was kind enough to put me up for the night.

I slept late the next morning, got my things together slowly, and went out to the curbside to catch the shuttle to the exhibition hall. It was raining, and the bus was late, but I figured I would stick it out. I waited. And I waited. And I waited. The thought of a cab steadily grew more attractive.

Several cabs came by, but each time I backed off at the last moment sure that the bus I saw in the distance was the late Comdex shuttle. Of course, it was not.

Finally a cab came up, and I jumped in. At that moment a man asked if I would not mind sharing the cab. I reluctantly agreed.



The fellow asked what I thought of the show. I replied that I had not been there yet, and that I was at the show only to meet a couple of specific people, and then would be on my way back home.

Seeing no I.D. badge on him, I asked if he was an exhibitor or attendee. He said "an exhibitor". I asked him how the show was going for him to which he replied, "Oh pretty well. I have been incredibly busy though. I had to give 54 press interviews yesterday."

Huh? Bing, bing, bing. Who is this guy?

Well, the man I shared the cab with was Bill Robinson, general manager of the Sharp color products division, and he was at Comdex to introduce Sharp's new line of color scanners. The scanners, it turned out, interfaced to a host computer using the General Purpose Interface Bus (GPIB), which coincidentally was one of the first interfaces we were going to implement for our Twin-X board.

Well, we talked for a while. And in our conversations, I learned that Sharp would have liked to have had their scanners interfaced to the Amiga. Said the gentleman, "But I don't see how we can do that for at least two years". Ahem.

A short time after Comdex, a Sharp JX-450 color scanner arrived at ASDG's building. We had thirty days to prove we could interface the device to the Amiga.

The first order of business was to design, prototype, and prove a GPIB module for our Twin-X board. Of course, we had not explained to Sharp that the GPIB module did not actually exist at the time we talked about doing the scanner software. So the hardware engineers at ASDG worked a little overtime.

Once the GPIB hardware had been developed, it became a software task to write the low-level routines which would control the GPIB bus and actually talk to the scanner. Of course, no one at ASDG had ever written any GPIB software before. So the software engineers at ASDG worked a little overtime.

With 15 days left on our clock we were set to start writing the code to actually control the scanner. After several days we actually got the scanner to talk to the Amiga without it, the Amiga or *both* devices curling up in large and uncooperative ball.

In the time we had remaining, we were able to develop what became the Trial screen of Professional ScanLab ® and the rudiments of what was to become Professional ScanLab's fine screen. So everybody at ASDG worked a little overtime.

This early version was crude. Very crude, in fact, if compared to what we are doing in Professional ScanLab and in ScanLab/100® (for the brand new Sharp JX-100 portable color scanner). We made arrangements to have Sharp see the prototype system at AmiEXPO, Chicago (1988). We waited anxiously for the man from Sharp to arrive. We did not know what he looked like, nor he us. We did know that one word from him, and ASDG's foray into color graphics would be over.

Well into the appointed day, a very lost looking fellow in a heavy overcoat wandered by the booth. He was sort of walking and doing slow pirouettes, trying to take in the cacophony of bleeps and sounds. (In case you do not remember or were not there, AmiEXPO Chicago '88 saw some fierce competition between audio digitizer manufacturers. We must have heard an F-14 take off from the U.S.S. America at full, realistic volume a thousand times).

He saw the ASDG name on the booth and came in to take a closer look. There was a crowd around the JX-450, and when he saw it, he knew he was in the right place. We showed him our prototype software. At that time we could not even render our own color pictures. We had three 4-bit plane IFF files out, one each for red, green, and blue, and then merged them inside Pixmate. Crude. But it was enough to get the go ahead, and we got to keep the scanner.

Soon after AmiEXPO, we developed our own color palette technology and were able to render HAM images inside of Professional ScanLab. It was then that we began to experience a now too familiar form of frustration. That of "Big Pixels and Little Palettes".

Professional ScanLab was often being shown on the company MacII's. With a 1024 x 800 24-bit true color card (alias "*Real Tiny Pixels and A Very Very Deep Palette*") the MacII scanner software literally changed nothing in the image in order to show it, and the images looked great. We, on the other hand, worked our buns off to pick the optimal set of 16 color registers which would milk the most visual accuracy out of each and every one of our huge lo-res pixels. It was discouraging.

But on the upside, we found that Professional ScanLab and the Amiga did have some small advantages. Like being able to perform a color separation 6 to 30 times faster than the best software on the MacII. Like being able to scroll around a HAM image as large as 5000 x 3000 without the user ever seeing any of those unsightly fringes along the left edge of the screen.

(HAM bases the value of any given pixel on the value of the pixel which is to its left. When the pixel to the left scrolls off the screen, the pixel remaining must be recomputed. Consider for a moment that each time the screen shifts, a column 16 pixels wide and as high as the whole bit map must be recomputed. And, it has to be recomputed faster than the eye can pick up the intermediate, and very messy results.)

> *When people think of scanning resolution, they often think in terms of black and white (1 bit) scanning. But a color dot contains an incredible amount of information. In fact, if you represented the amount of information in a black and white dot as one inch, a 24 bit color dot would stretch just under 265 miles.*

Oh, and while the HAM recomputation is taking place, also consider that we are paging the image in and out of CHIP ram and FAST ram. A solid month of 16 hour days was spent on the scrolling code alone.

Another issue was the sheer volume of data which comprises any 24-bit plane image. We calculated that the JX-450, if asked to scan its maximum area at its maximum resolution, would deliver 52 megabytes of data to the Amiga. So much for our fully decked out 8 megabyte Amiga.

As it turns out, the huge disparity between what the scanner can deliver and what the Amiga can handle without true virtual memory does not really impact the use of the scanner in color publishing all that much. We learned that most scanning applications require no more than 150 dots per inch as opposed to the 300 dots per inch of which the scanner is capable. Also, it is pretty rare that users need to scan all of an 11 by 17 inch area.

When people think of scanning resolution they often think in terms of black and white (1 bit) scanning. In black and white, 300 dots per inch is not close to being acceptable for professional applications. But the JX-450 is a 24 bit per pixel scanner, not black and white. A color dot contains an incredible amount of information. In fact, if you represented the amount of information in a black and white dot as one inch, a 24 bit color dot would stretch just under 265 miles.

We also learned that the required input resolution (for good results) is dependent upon the relative size of the input image versus the output image. For instance, if you print something one quarter the size of the original, you can cut in half and get the same results.

Given what we learned, we discovered that an 8 megabyte Amiga can serve almost all of the needs of a color publishing house. Of course, if you are lucky enough to have a 32 megabyte 32-bit memory board on your 68020 or 68030 board, you can do more.

Once Professional ScanLab started shipping we were able to turn our attention to the next small problem. That of "Now that we can generate these really cool 24-bit images and 24-bit file separations, who can process them?" We found the answer to be, "no one".

We knew how much work went into getting the 24-bit color processing right, and after talking to Gold Disk, we confirmed our suspicion that they would not have the resources to develop the necessary 24-bit support that would allow our images to be directly imported into Pro Page. The question then became, "How do we *lend* Pro Page our ability to process 24-bit color?"

The answer came to me during a University of Wisconsin basketball game (the Badgers won, by the way). Have Pro Page insert the key information that we would need in PostScript comments imbedded into their color separation output. That way, we could edit the output of Professional Page as a post-process. We could "strip out" the 12-bit color separations done by Pro Page and "strip in" the 24-bit color separations performed by Professional ScanLab. ReSEP was born.

An interesting postscript (oh dear, those puns do creep up silently don't they?) to the story of ReSEP is that several months later the publishing software giant, Aldus, introduced the Open Pre-Press Interface on the MacII. OPI is a system whereby DTP software imbeds comments in their PostScript output so that other programs can key in on them. Sound familiar?

The focus of Professional ScanLab has thus far been the printed page. Many of our customers have asked us for improved rendering capabilities for the purpose of displaying images on the Amiga's screen. Recently we have had the opportunity to create what we hope might be one of the finest image rendering engines yet produced for the Amiga. Called ScanLab/100, we hope that the product will be shipping by the time this article hits the streets.

The focus of ScanLab/100 is to generate the finest rendering possible given the limitations or constraints of the Amiga's display hardware. We have included some sample images with this article to show you how far we've come with ScanLab/100 towards getting the most out of the Amiga's display.

Pioneering the use of 24-bit color technology on the Amiga has not been easy. And, it certainly has not been without cost. Professional ScanLab, ReSEP, ScanLab/100 and our other color products are the work of an extremely talented and enormously underpaid team of engineers. It's been my pleasure and privilege to work with them.

In all we have written, approximately a quarter of a million lines of color processing code over the last eighteen months. This effort was and is necessary to give the Amiga a credible presence in the color publishing marketplace. To us, the idea of the world's most capable, inexpensive color computer not being at the forefront of color publishing is repugnant.

•AC•

ASDG, Inc.
925 Stewart St.
Madison, WI 53713
(608) 273-6585

Professional ScanLab
(Software and Hardware
Interface), Price: $995.00
For use with Sharp JX-300
($3995.00)
or Sharp JX-450 ($6995.00)

ScanLab 100
(Includes Software, Interface and
Sharp JX-100 scanner)
Price $995.00
Inquiry #243

AC's "View from the Inside" invites developers to share their unique points of view on the creation, development and usage of their products with the entire Amiga community. Interested parties should contact our editorial offices.

Bug Bytes

The Bugs and Upgrades Column

by John Steiner

We received several letters with information on problems and workarounds, as well as a couple of upgrade notices for commercial software this month.

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Robert Singleterry Jr. of Idaho Falls, ID is having a problem with both RAD: and the ASDG recoverable RAM: disk. RAD: gives read/write errors and KEY errors. The ASDG device has similar problems. Both these devices work reliably in most Amiga computers, so the finger of blame seems to be pointing to Mr. Singleterry's hardware which consists of an older Amiga 1000, a 2 MB MicroBotics memory board, the *Amazing Computing* .5 MB memory modification (AC V2.1), the grounded PAL modification, and two floppy drives.

If you have run into similar problems with either RAM: or RAD: disk, or if you have found a solution or workaround, please let me know. I will pass the information along to Mr. Singleterry.

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Peter Orvis of Arlington, VA reports of a problem with the September 29, 1989 update of WordPerfect. The PRINT program does not subtract one inch from the top margin setting when the "Hand Feed" mode is selected. The result of this is that paper in a hand-fed printer, which is automatically or manually fed so that the top edge is under the bail, will be fed further in accordance with the top margin setting, just as though it were continuously fed paper in a tractor printer. This fault was not present in previous versions of WordPerfect. The obvious workaround is to manually reduce the top margin by one inch, or whatever is required to make the print function handle the top margin correctly.

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Paul Olson of Germantown, MD sent a copy of a rather lengthy letter he mailed to Electronic Arts regarding a problem with DeluxePaint III when used with the CalComp ColorMaster. The symptoms of the problem are as follows: Immediately after loading the paper, the plotter is instructed to advance the ink roll (a cellophane roll with three wax-based ink frames: yellow, magenta, and cyan) to the next yellow frame. The plot is then generated. The plotter is again instructed to advance the ink roll to the next yellow frame. The plotter is never instructed to eject the paper.

If multiple copies are requested, the additional copies are simply printed on the same sheet. The only way to eject the paper when using DeluxePaint III to generate the plots is to press the plotter eject button when the plot is completed.

Mr. Olson researched the plotter manual and determined that the developers of DeluxePaint III assumed that all plotters use form feed characters to eject the page. The ColorMaster uses the end-of-transmission character. As a result, the form feed characters cause the printer to use two sets of color frames for each plot. At over $3.20 per frame on the color roll, the waste of a frame for every picture is too expensive to ignore. If you have ever had a problem combining several software products provided by different vendors, you will immediately identify with what happened next.

Mr. Olson spoke with Electronic Arts, who told him that since Commodore supplied the driver, it was their problem. He called Commodore, and they told him it was CalComp's problem, since they wrote the driver. CalComp pointed the finger at Electronic Arts, and said that it was their problem.

Mr. Olson found that both Photon Paint and Digi-Paint 3 use the CalComp driver to drive the plotter correctly, and his current workaround is to work in DeluxePaint III and print from Photon Paint.

Mr. Ed Gwynn, the quality assurance engineer for Electronic Arts, seemed to agree with Mr. Olson that the problem was caused by the way the program handles plotter devices rather than in the driver itself, as other programs were using the CalComp driver correctly. Mr. Gwynn said that the problem would be forwarded to DeluxePaint III author Dan Silva for correction.

• • • • • • • • • •

Walter Strickler of Boulder, CO wrote with several potential problems for owners of M.A.S.T. Tiny Tiger hard disks. Mr. Strickler reports that older A1000 units have capacitors between the signal lines of the parallel port and ground. Since the Tiny Tiger plugs into the parallel port, this can cause problems.

A call to M.A.S.T. revealed the solution immediately: remove the capacitors. They recommend removing C33-C35. Also suggested was removing all the parallel port capacitors (C23-C35). Removal of the capacitors solved the problems. In conversing with technical support personnel at M.A.S.T., I found that they do not recommend the removal of these capacitors. Rather, they recommend replacing C33, C34, and C35 with 100 picofarad capacitors.

The second problem Mr. Strickler writes about concerns the transparency of the parallel port connection. M.A.S.T. claims that data to the printer is passed through the Tiny Tiger transparently. This is true if you ignore multitasking, which is a major reason to have an Amiga. If you send data to the printer from one process while accessing (even reading) the hard disk from another process, the printer hangs.

The technical support person at M.A.S.T. said he never heard of any problems with the system when multitasking, and he would like to have more details on which programs are being run when the system seems to hang up. The mountlist entry for these 50 MB units had a defective entry which caused an unusual problem.

Once the drive became over 50% full, certain files would be trashed when copied to the drive. There was no warning, the data that was written was just wrong. If enough files were removed to go below 50% full on the drive, then recopying the trashed files worked just fine.

A representative from M.A.S.T. told Mr. Strickler that Seagate said the 50 meg drives contained 614 cylinders, so that's what they set the mountlist entry for 'highcyl' to. They said the real number is 607, because some of those cylinders are reserved for SCSI internal use. When the disk becomes over 50% full, the hashing algorithm becomes more random, and the data for files with certain names sometimes ends up in the reserved area.

The solution is to back up the drive and reformat with highcyl set to 607. Actually, you may have noticed an inconsistency in this response. They said that they thought the drives contained 614 cylinders and so they set highcyl to 614. The latter would imply 615 cylinders total (including a lowcyl of 0), and Mr. Strickler was suspicious of the 607 number. Is that 607 cylinders or a highcyl value of 607?

Not having any documentation on the drive mechanism, and not thinking it was worth another call to M.A.S.T., he decided to play it safe and set the highcyl to 606 (for a total of 607 cylinders). This has worked just fine, as the problem with file trashing has not occurred since, even though the drives in question are well over 50% full.

In my visit with the technical support people at M.A.S.T., the people I talked with said that they do not remember having a problem like this and they requested complete details on the problem. I promised to send them a copy of the letter I received for their evaluation, and they promised to reply to the problem once they had had a chance to more thoroughly determine what kinds of problems Mr. Strickler was having.

As I received the correspondence on this comment only a few days before deadline, I opted to comment on the possible loss of data with these drives and advise, if you have the Tiny Tiger 50 MB drive, and the mountlist highcyl entry is 614, that you may incur a potential loss of data. You should contact M.A.S.T. about this. Next month I will print any information they provide as they will have had a chance to study the problem.

Overall, Mr. Strickler thinks the M.A.S.T. Tiny Tiger is a fine piece of hardware. He comments that it is inexpensive, quite fast for a parallel port-attached disk, and is portable between current Amiga models.

• • • • • • • • • • •

Also in this month's mail bag, I received a letter from Gregory Epley, President of Second Sight of Lexington, NC. He writes that Version 1.3.0 of ANSIEd, the ANSI Screen File Editor, is now available as an upgrade to all registered users. The upgrade fixes several major and minor bugs, compresses space gaps for reduced file size and 15-45% faster displays, and optionally stores icons for files. The interface and installation procedures have been greatly improved as well. Registered users can receive the upgrade free by sending their original master disk to Second Sight.

• • • • • • • • • • •

Electronic Arts has released DeluxeVideo III, a major upgrade to one of the first truly powerful animation programs. The latest version requires 1 MB and two disk drives and supports all Amiga IFF modes including HAM and overscan. SMUS and S5VX files, ARexx, MIDI, and Supergen support are also provided.

The program also works with DeluxePaint III. To upgrade from previous versions of DeluxeVideo, send $49.95 + $7.00 shipping and handling (CA residents must pay $4.20 sales tax) along with the front cover of the manual to Electronic Arts DeluxeVideo Upgrade Offer.

• • • • • • • • • • •

That's all for this month. If you have any workarounds or bugs to report, or if you know of any upgrades to commercial software, you may notify me by writing to:

John Steiner
c/o Amazing Computing
Box 869
Fall River, MA 02722
...or leave EMail
to

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or
73075,1735 on CompuServe

•AC•

OOPS!

In "Anim-Aids: Where to find the help you need," in the January (Vol. 5 No. 1) issue of AC we neglected to provide the product information for FOR ART'S SAKE. We sincerely apologize for this mistake.

For Art's Sake
For Art's Sake
2455 Volusia Ave. #206
Daytona Beach, FL 32114
(904) 252-6442
Price: $19.95
Inquiry #227

Products Mentioned

DeluxeVideo Upgrade Offer
Electronic Arts
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San Mateo, CA 94403-7578
(800) 245-4525
Inquiry #203

M.A.S.T.
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C Notes from the C Group

"Static" Variables

by Stephen Kemp

In past articles, we have discussed different variable types and ways to define those variables. Primarily we have focused upon local variables (those defined within a function) and global variables (those defined "outside" of functions) which are available to the entire program. This month we will discuss a modifier for variable definitions, which makes "static" variables, and how these relate to the normal declarations.

Global variables (sometimes called external variables) can be referenced by any function within a program. Additionally, a global variable retains the last value assigned to it throughout the remainder of the program (or until assigned again). These types of variables are generally used for information that needs to be available for numerous functions throughout the program and eliminate having to pass the variable as a parameter. At any given point, any function can reference a global variable to determine the value that was last assigned to it, or the function can assign a new value for other functions to reference. Finally, most compilers include code that assigns a global variable a "zero" value at the start of a program.

Local variables, on the other hand, can only be used by the function that defines them. And, unlike global variables, the value of a local variable is undefined when the function begins and must be assigned each time. Local variable space is assigned to a function each time the function begins. The space used for local variables is assigned from an area of program memory called the stack. Your program's stack space is usually the same (constant) size throughout your program. When a function begins the space necessary for local variable definitions is assigned by adjusting pointers into the program stack. At the function's exit, the stack space used by local variables is then reclaimed (pointers readjusted) and available for subsequent functions to use.

The constant use and reuse of the stack means that when space is allocated at the beginning of a function, you cannot rely upon the value your variables will contain. Unlike global variables, the compiler will not include code to clear your local variables. Global variables only have to be cleared once at the start of the program; a minor amount of overhead. Clearing local variables would require this overhead in every function that declares variables. Also, many of the functions that you write will have to turn around and reassign a value anyhow because you probably did not want zero. Rather than penalizing your program's performance, it is left to the developer to ensure that initialization is done properly. In fact, many compilers will issue a warning if they think a local variable is being used prior to initialization. Usually the warning is something like, "Warning: Possible use of variable before definition."

There is one last danger I should mention about local variables declared by functions. Since they only have "space" while the function is active, it is important to NEVER return a pointer to a local variable from a calling function. Do you see the danger here? Remember, the stack space is likely to be reused by subsequent function calls. Therefore, the pointer you return may at first point to what you intended but will soon be undefined. It is okay to pass local pointers "down" to functions you call, but never "up" to those that called you.

Using the stack for local variable space, however, is an important feature. Each time a function is called, it first allots the variable space it requires. That is why it is possible to have a recursive function. Each invocation has its own variable space and will not interfere with the former's "position". Likewise, it is important to realize that reusing the variable space is more memory-efficient. Carrying around all of your variables as globals would make you quite a memory hog.

Now that we have had this refresher on where variables are kept, it is time to introduce a new modifier that limits the "scope" of a variable. The word "static" can be used as a modifier to variable declarations. This modifier can be used on any variable definition and allows you to bend the rules set forth in the previous discussions of global and local variables. Here are a few example definitions:

```
        static long  recnum;
        static char  last_message[80];
        static MYTYPE lvar;     /* where MYTYPE is a structure
typedef*/
```

As you can see, the static modifier is not difficult to use. It merely precedes the variable type indicator. It can be used on either variables declared within or outside a function. I did not say local and global variables because the static modifier changes those definitions.

When a static variable is declared outside of a function (like a global variable) it makes what you might call a module-global. The variable is only global to those functions declared within the same program module (or file if you prefer). Your functions in the same module will not know the difference between a module-global and any other global variable. However, outside of the declared file, the module-global variable is no longer defined. This means we can limit the scope of a global variable to a given file. In all other respects, a module-global variable is treated like any other global by the compiler and is usually initialized to zero as any other global variable would be at the start of your program.

Static local variables do not have to limit the scope of reference because local variables can only be referenced by the function that declares them. So, what does a static local variable give you? It gives local variables more permanence. Rather than allocating the space each time the function begins, your C compiler will assign the static variables space from the regular memory (again like a global). This means that your variable will retain the last value assigned to it no matter how often the function that declares it begins and ends. In a sense then, the variable is a global variable that has a limited scope to one function.

The value of static variables lies in the fact that often your functions need to know former values, yet you don't want to confuse the variable with your global ones. Since static variables are limited in scope, they can be given the same names in different areas without interfering with each other. This fact can help to ensure that your variables have useful names without causing a conflict with subsequent function (or module) declarations.

Wrapping up this discussion, I should mention that you can also declare static functions:

```
static long get_number(var)
```

These are declared similarly and have the same effect as module-globals. The function's scope is limited to a single file. Those functions declared within the module can reference the function, yet it will be invisible to those in other modules. This too allows you to assign useful names to functions without conflicting with other static declarations in other modules.

This has been a brief introduction to the world of static variables. If you still have questions, get out your favorite reference manual and see if the author(s) can fill in the blank spots. Then get out your compiler and try a few experiments. You can learn a lot from experimentation.

•AC•

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Snapshot

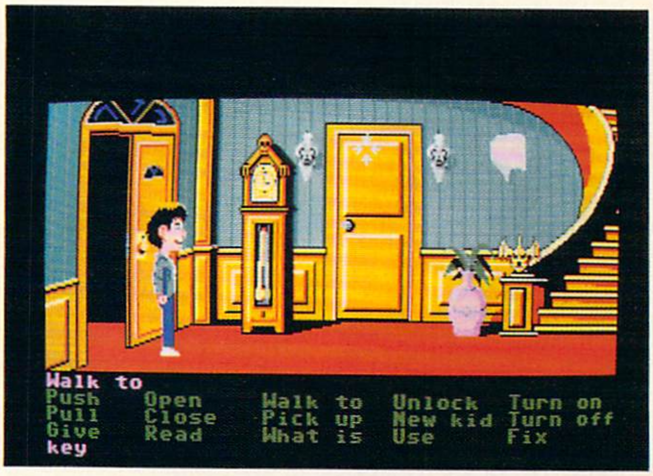
- Stellar Crusade
- Maniac Mansion
- Muscle Cars
- The Cycles

by R. Bradley Andrews

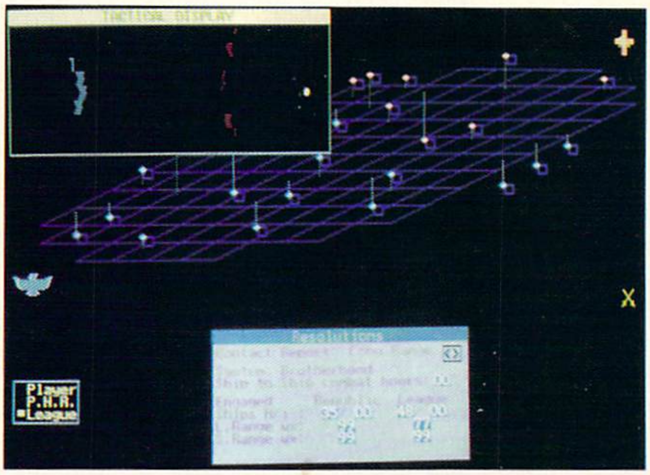
STELLAR CRUSADE

First on the list this month is another Amiga entry by Strategic Simulations, Stellar Crusade. While the interface is still not what it should be, it is an improvement over Star Command, and it is at least as enjoyable to play as Red Lightning, Strategic's WWIII game.

Sometime in the far future (isn't that when all these things take place?) two small empires are vying for control of a rich group of stars in a remote arm of the galaxy. The Terran Navy had kept the peace in the area for many years, but with their departure, the People's Holy Republic declared a holy war against their bitter rivals, the Corporate League. Filled with an intense hatred of capitalist ways, the Republic used their bizarre religious combination of ancient Biblical and communist writings to justify one final act to clear their corner of the galaxy from the scourge of free enterprise. Only the "timely" assassination of the man who had declared the Jihad, First Elder Grisham, gave the League the few years respite they needed to prepare for the massive assault that was to follow.



Rescuing Sandy the cheerleader: Lucasfilm's Maniac Mansion.



Vying for control of a rich group of stars in a remote arm of the galaxy: Strategic Simulation's Stellar Crusade.

Stellar Crusade combines elements of economics, exploration, production, and combat into a grand strategic struggle for this sector of space. While the entire game system would be a bit much for the starting player, the rules are designed to gradually ease the player into the mechanics of the game bit by bit. Each scenario covers a different aspect, and if played in the proper order, they will quickly teach the player the mechanics of play.

Play begins with Operation Gold River and Plan Jericho. These two battles only last a few years and are strictly combat exercises. All production is automatic, and the player only needs to be concerned with maneuvering his fleets for confrontation with the enemy. Operation Gold River is very simple, since the only goal is to control Brotherhood, the Republic's home planet. Plan Jericho is a little more extensive, and points are given for control of eight key planets along their common borders.

The next section covers exploration and colonization, which is vital to winning the longer contests, since each side only begins the game with two or three planets under their control. Appropriately named, Exploration covers the first five years of the war, and the heady wave of expansion that characterized the chaotic beginning of the war.

Finally the player can tackle the game's economic system. While it is not really that complicated, many decisions must be made to successfully wage war in this dark future. The four remaining scenarios combine all these elements together to challenge even the experienced player. Two versions of The War are included, one historical and the other an alternate order of events where First Elder Grisham was not assassinated and, therefore, had personally launched the fighting. Each runs about 50 turns until one side or the other is subdued.

The last two scenarios are even longer affairs. The Short Campaign is only short by comparison and will typically run around 75 turns, beginning just after the initial period of chaotic expansion and after things have had a chance to balance out. The Long Campaign is the grand daddy of them all, lasting about 100 turns and including the period of initial imbalance. Before fighting the war in earnest, the players must balance out their productions to optimize their chances of winning.

Stellar Crusade combines elements of economics, exploration, production, and combat into a grand strategic struggle...

Stellar Crusade can either be played solo, against the computer, or with two human opponents. If a solitaire match is chosen, the human player always has command of the League. I suppose the designer thought the computer was more "religious" in its outlook.

The player has control over many aspects of gameplay, such as the difficulty of the computer player; whether realistic command and control will be used; whether fog of war constraints will be used; and whether resupply will be done for the player. In the later campaigns, players can even design their own ships to complement their own playing style.

As I mentioned before, the graphics in the game are very similar to that of Strategic's other releases. The map of the local group takes up the upper half of the screen and uses an interesting 3D-like display to show the location of each system. The base plane of the galaxy is drawn slightly tilted, with colored dotted lines indicating how far above or below the plane each system lies. This was a nice touch and looks reasonably well.

Unfortunately, the rest of the graphics fall short. Even the title screen is not very clear. The main problem is the overabundance of text. I am not sure that it could have been completely avoided, but most of the information used in the game is displayed in a straight text manner. Because there is so much information to display, the game has many screens packed with information, which can be tough on the eyes.

Where they tried to add graphics, they often missed the mark. Production capabilities do lend themselves well to the pie charts used in the planetary displays, but the use of icons for population figures is counterproductive, and it is one of the places text should have been used. Basically the system works as follows: Each man-shaped figure represents 1000 people, with underlining used for powers of ten. Thus 287,000 would have two people with two underlines each, eight people with one underline, and seven people without adornment. A simple "287" would have been much better and easier to read.

The different ship types are rather crudely drawn and simply use a common front and rear end, filling in the middle sections from a palette based on their structure.

I suppose this might make you think I am totally down on the game. On the contrary, it has great potential and appears to have a solid computer model underneath, but the difficulty of the interface again hinders play. I sincerely hope SSI will listen to its users' feedback and start coming out with games that do more to utilize the extreme power available in the Amiga, instead of the half-hearted attempts they have made so far.

The price is a bit steep, but since the competition is weak, the hard-core space combat/warfare player may still want to pick up a copy of the game, especially if they can find it at a discount.

MANIAC MANSION

Next on the list is a game that has been out for a while on the Amiga, but since it is a good game, and it has not been covered, I decided to cover it here.

Maniac Mansion is a fairly bizarre role-playing game unlike any other before it. Originally released in 1987 for the Commodore 64 and Apple II personal computers, the game has been greatly improved and brought up to the standards of the 16-bit machines. It is not perfect, but it is a good start in the right direction, and did lead to several follow-on games, two of which I will mention briefly later.

A demented scientist has kidnapped Sandy, everyone's favorite cheerleader, and has hidden her away in his secret laboratory in the basement of an ancient Victorian mansion. With the help of his devious assistants — his wife, Nurse Edna, son, Weird Ed, and several unearthly pets — he is preparing his victim for irreversible brain surgery, ending forever her hopes of becoming homecoming queen. From a pool of eight of her fellow students, you must assemble a three-person rescue team, navigate the hazards of the house, and free her from imprisonment.

The game has a movie-like feel to it, thanks to the Lucasfilm staff. In addition to hilarious sight gags and smooth horizontal scrolling, "cut scenes" are used liberally throughout play to show the players what is happening "back at the ranch", keeping them up-to-date on the whole system. The game is fairly easy to play since it uses a "point and click"-type interface. It is very easy to play the game with only a mouse, though many of you will prefer to keep one hand on the keyboard as an alternate way of entering many of the one keypress command equivalents used during play.

This ease of play does not mean the game is shallow. On the contrary, the game has so much depth that it will take the player a long time to actually solve the game. The available commands provide for a wide range of options, and nearly anything can be examined, encouraging the player to poke around all areas of the screen. In addition, five different endings await each of the possible fourteen teams that can be used to rescue our beloved cheerleader. Do not get too overwhelmed; all the puzzles are solvable, though some will require significant thought. And remember, think bizarre!

The graphics are a semi-3D view, reminiscent of the Space Quest series, and the on-screen characters move around the screen fairly convincingly. The graphics may not do everything, but they are good enough that they get out of the way and let you play the game.

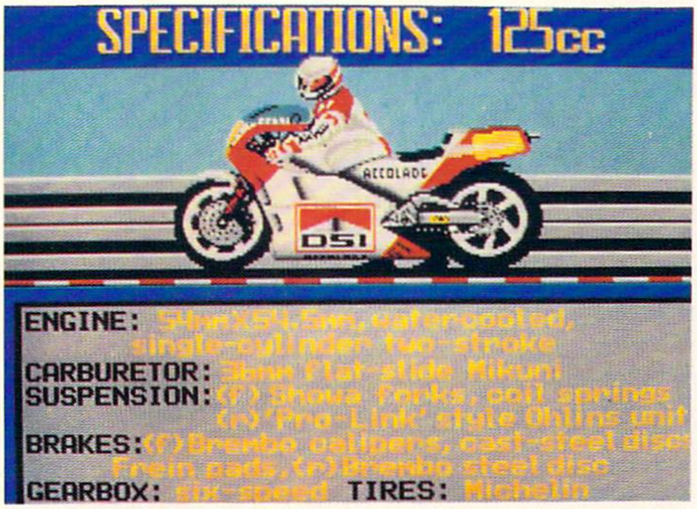
While the game manual is only about ten pages long, the documentation includes a poster resembling the school's bulletin board. In addition to its humorous aspect, this poster contains many clues to overcoming the obstacles that will face the player in his attempt to free the cheerleader and save the world! (You always have to save the world in these games, right?)

Maniac Mansion is a quality production and shows Lucasfilm's touch. Gameplay is challenging and will provide many hours of entertainment. The games replayability also adds to its value. This game is a must for those who enjoy adventure-type games.

Two similar games were more recently made in the same series, both enjoyable – Zak McKraken and the Alien Mindbenders, and Indiana Jones and The Last Crusade: The Graphic Adventure. Both also add a few new features to the already good game system.

MUSCLE CARS

Nostalgia is a hot topic nowadays, and in attempt to cash in on that craze, Accolade has released Muscle Car, a data disk for Test Drive II: The Duel. This disk covers five classic cars popular throughout the Sixties and known for their "muscle".



```
ENGINE: 54mmX54.5mm, watercooled,
        single-cylinder two-stroke
CARBURETOR: 38mm flat-slide Mikuni
SUSPENSION:(f) Showa forks, coil springs
           (r)'Pro-Link' style Ohlins unit
BRAKES:(f)Brembo calipers, cast-steel disc
      Frein pads,(r)Brembo steel disc
GEARBOX: six-speed  TIRES: Michelin
```

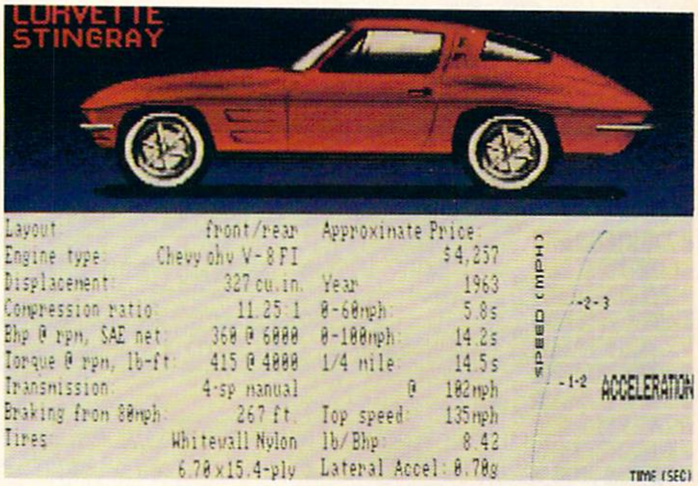
Vrroomm: The Cycles by Accolade.

Included on the disk are the 1963 Corvette Sting Ray "Split Window" Coupe, the 1968 Shelby GT500 Cobra, the 1967 Pontiac GTO, the 1969 COPO 9560 ZL-1 Camaro, and the 1969 Dodge Charger Daytona. These were true All-American powerhouses.

While not as powerful as the Ferrari F40 or Porsche 959 that come with the main program, these cars have their own unique features and can be fun to race against each other.

The graphics are not as good as the original though. Some of the feeling of depth is missing, and these cars seem rather plain. I realize that they may not have been as sleek as current sports cars, but they did look nice when polished up and cruising the town.

The cars also sound different, a nice feature. A slightly rougher rumble is used as the car speeds along, reminiscent of the era. This is a nice improvement.



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Displacement:             327 cu.in.   Year          1963
Compression ratio:           11.25:1   0-60mph:      5.8s
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Torque @ rpm, lb-ft:     415 @ 4000    1/4 mile:    14.5s
Transmission:            4-sp manual          @   102mph
Braking from 80mph:          267 ft.   Top speed:  135mph
Tires:               Whitewall Nylon   lb/Bhp:       8.42
                      6.70x15.4-ply    Lateral Accel: 0.70g
```

True All-American powerhouses: Accolade's Muscle Cars.

On the whole, the data disk is OK. If you really enjoyed Test Drive II, you might want to add this to your collection. If you do not play it a lot, it is not worth digging out just to play this disk.

THE CYCLES

The last game this month is The Cycles, also by Accolade. As you may have guessed, this is another in the growing field of motorcycle racing games. The program features races on fifteen tracks throughout the world. Each track is in a different country and features a different layout. Some are a series of gradual curves with the ocassional ability to go flat out. Others are extremely curvy and constantly require preparation for an upcoming twist or turn.

Three different cycles are available to race: 125cc, 250cc, and 500cc. The higher the number, the more power the machine has, and each cycle will race against others of its own class. The game also has five difficulty levels, from Beginner, with its automatic shifting and forgiving drivers and course all the way up to Pro, where you will face off with the best, and put your skill to a real test.

Three different options are available during play. Practice laps can be taken on any course to learn its particular curves and twists. The next step is usually to race the same track.

After completing a qualifying lap, you are put head to head with nine other top-quality racers who want to race you into the ground. A complete race can consist of anywhere between 1 to 99 laps, at your option.

After you have mastered each course individually, you will want to go for the whole ball of wax on the Championship Circuit. This places you, and the same nine drivers head to head on each track in succession. May the best racer win.

The bottom of the screen features the view over the front of the motor cycle, which is rendered in good detail. The actual course is rather sparse and features little detail in the way of scenery. Along the top of the screen are three useful information displays. An overhead view of the current course is shown in the upper left corner, the rear-view mirror of your cycle is in the middle, and an information readout, with your current speed, lap time, and race time is in the upper right corner.

Either the joystick or the keyboard can be used to control the cycle during the race. However, as is common with games of this type, it can take a while to get used to the controls. New users will often find themselves weaving back and forth from one side of the track to another, even at the easy level.

This is the game's greatest failing. When I first began playing, I could not pass anyone in a real race, even at the easiest level, since I kept going off the road. I suppose this is realistic, but it is my view that games of this type should let even a new player do well at the easy level. I do not expect to win instantly, I just want to do well, and have a reason to continue on into the game. The higher difficulty levels should be where the challenge comes in.

I guess I have yet to find a racing game that has a really good control. They all tend to jump back and forth pretty easily, a bit too responsive. Maybe a real steering wheel device will come out at a reasonable price.

Until then, only true racing game fans, who need another fix should buy The Cycles. There is simply not enough here to make it stand out. Compared to other cycle racing games, it is OK, but there are other racing games that are better.

•AC•

Products Mentioned

Stellar Crusade
Strategic Simulations, Inc.
675 Almanor Avenue
Sunnyvale, CA 94086
(408) 737-6800
Price: $54.95
Inquiry #207

Maniac Mansion
Lucasfilm, Ltd.
P.O.Box 2009
San Rafael, CA 94912
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Orders: (800) STARWARS (782-7927)
Price: $49.95
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Muscle Cars
The Cycles
Accolade
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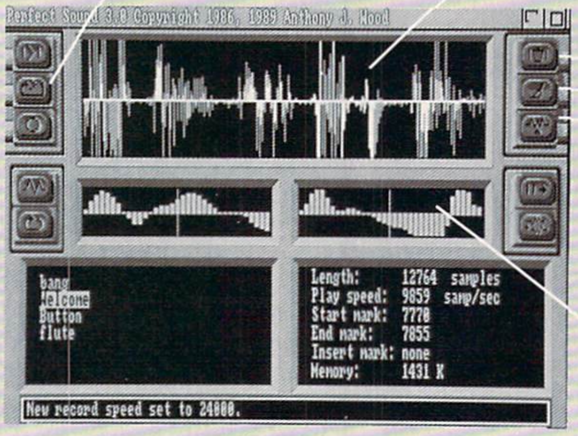
The sound you are currently editing is graphed here. You can easily mark sections to edit by dragging your mouse over the graph.

Common tools such as delete, paste, and insert are available by clicking on buttons. Other tools are available via menus.



```
Perfect Sound 3.0 Copyright 1986, 1989 Anthony J. Wood

bang
Welcome
Button
flute

Length:       12764  samples
Play speed:   9859  samp/sec
Start mark:   7770
End mark:     7855
Insert mark:  none
Memory:       1431 K

New record speed set to 24000.
```

Zoom in on your sound. Individual samples are shown for precise editing.

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Circle 164 on Reader Service card.

Analog to Digital Conversion

by John Iovine

This month we will build an analog to digital (A/D) conversion circuit. Analog to digital conversion circuits are very useful. They allow the computer to interpret or analyze an input voltage signal. The voltage signal can be from any number of different sources and can be digitized for use or for display by the computer. Some more familiar examples are sound and video digitizers. The simple digitizer we will build allows the computer to monitor the real world environment. Depending upon the type of sensor (transducer) we use, the circuit can measure and/or detect light, heat and some toxic gases.

The A/D converter we will use is a serial A/D chip. This is very easy to interface to the Amiga via the parallel port. You may wonder why we are using a serial A/D chip on the parallel port. The Amiga has a functional bi-directional serial data register and clocking line on the parallel port. This increases the options as far as interfacing with the computer, and it is real easy to do.

For those of you who may have missed the first installments of this series, I will review some preliminary information so you won't be completely lost in the description of the circuit or its operation.

The basic definition of binary signals: a binary “1” is equal to approximately 5 volts, a binary “0” approximately 0 volts. Binary signals can be inputted to or outputted from lines PB0-PB7 on the Amiga parallel port. Previously, we used parallel interfacing. This is easily implemented by POKEing a control number in the Data Direction Register (DDR), then reading or writing to the port via the Data Register (DR). The port is bi-directional; any of the pins PB0 - PB7 can be configured as either an input or an output in whatever combination is required by the user.

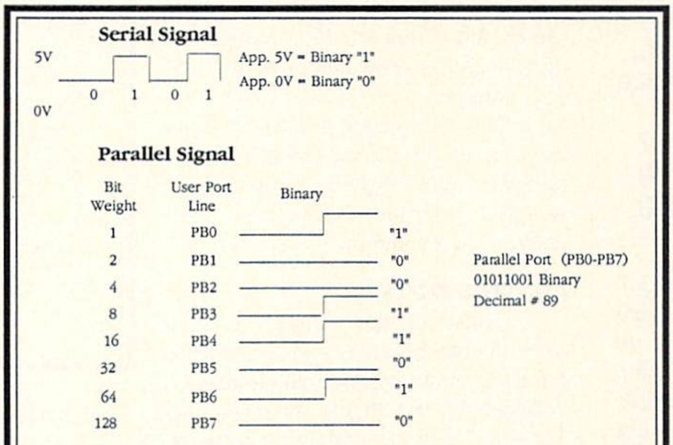

Figure One

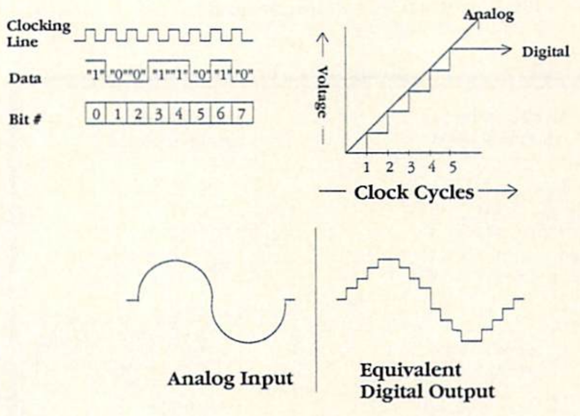

Figure Two

Parallel interfacing transmits or receives eight data bits (see Figure One) simultaneously on eight parallel lines (PB0-PB7) which we call a data bus. This is what we have experimented with on the Amiga's parallel port. Figure One details the PB lines off the port. To read the binary number you add the decimal values represented by each bit. The binary number in this example is “01100101” This binary number translates to the decimal value (1 + 0 + 0 + 8 + 16 + 0 + 64 + 0) of 89.

Figure Two shows how the same information can be transmitted or received over a serial line. The figure should be read from right to left. The “most significant bits” (MSB) are transmitted first. A serial bus need only consist of two lines. As its name implies the information is transmitted serially, that is, one bit at a time. The first bit transmitted or received is bit #7. The clocking line correlates the precise moment to receive or transmit data on the line.

Amiga computers have a built in Serial Data Register (SDR) and clocking (CNT) line on the parallel port that can receive or transmit serial data in such a fashion. This greatly simplifies our programming task.

ANALOG SIGNALS

We have stated that we will be measuring analog signals and converting them to their digital equivalents for use by

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the computer. One property of analog signals is that they are infinitely variable between any two points. Take as an example the possible voltages existing between 1 volt and 2 volts. The possible number of analog voltage measurements between these two points is infinite. It can have virtually any value, such as 1.1 volts or 1.0000001 volts or 1.00000000000000001 volts. As you can see, voltages can vary by infinitesimal amounts. The same is true for all natural phenomena such as time, temperature, gravity etc.

DIGITAL CONVERSION

The digital conversion of an analog signal occurs in discrete, predefined steps. A simple example is an electric light that has two states, on or off. A rising voltage, plotted digitally against time, would not plot as a straight line (analog signal), but would jump in increments in a staircase fashion (see Figure Two). The chip we are using has an 8-bit resolution. This means it can output values 0-255. Because the resolution or step value of an analog signal is infinite, and that of digital conversion is limited to 255 discrete values (in a 8-bit chip), conversion errors do occur. These are called quantization or "rounding off" errors.

Lets look at this a little more closely. If our chip is measuring voltages between 0 volt and 5 volts, it has a resolution of 5v/255 steps or .0196 volts per step. If a voltage varies from one step to another by less than .0196 volts, it would be rounded either up or down to the nearest step. This rounding off to the nearest step is called quantization error.

It also follows if we are reading a number from the chip, say decimal 100, we can use that to calculate the voltage being input. 100 x .0196v = 1.96 volts or (approximately) 2 volts.

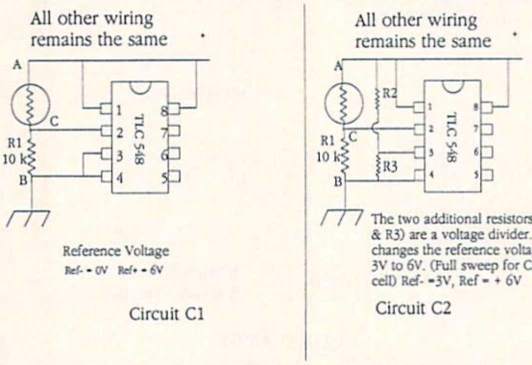
SERIAL A/D CONVERTER CHIP

An analog to digital converter does exactly what its name implies. It reads an analog voltage then converts it to the proportional digital (binary) value for use by the computer. In our case, this digital value is transmitted serially into the computer.

The chip we are using is an 8 pin chip, some of its capabilities are as follows, max 40,000 samples per second, internal clock and 8-bit conversion resolution.

CONSTRUCTION

Construct the circuit on your experimenter's breadboard. As shown in Figure 3, a 10K potentiometer is inserted between the +6 volt line and ground (pins 1 and 4). The wiper of the potentiometer is connected to pin 2, analog input of the A/D chip. This is a testing circuit for you to test the construction and the program.


All other wiring remains the same
A
C
R1
10 k
B
1
2
3
4
8
7
6
5
TLC 548
All other wiring remains the same
A
R2
C
R1
10 k
R3
B
1
2
3
4
8
7
6
5
TLC 548

Reference Voltage
Ref- = 0V Ref+ = 6V

Circuit C1

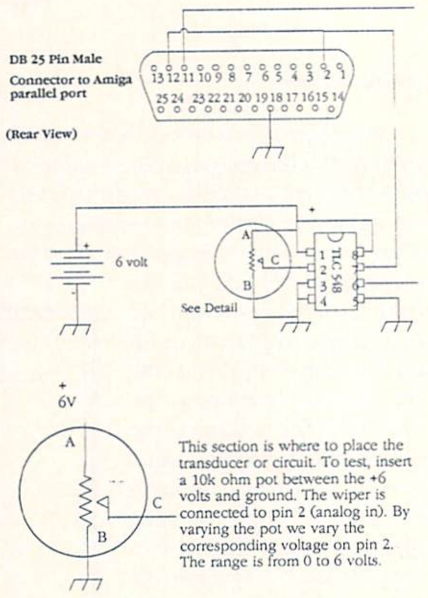
The two additional resistors (R2 & R3) are a voltage divider. This changes the reference voltage to 3V to 6V. (Full sweep for Cad cell) Ref- =3V, Ref = + 6V

Circuit C2

Figure Four

In addition, notice the three wire labels (A,B,C) placed on the three wires to the pot. I placed this notation there so you can see how simple and easy it is to connect the transducers into the circuit. The transducer schematics also have their respective wires labeled showing the connections into the circuit.

By looking again at the schematic and the program you will notice that pin 2 on the Amiga port (PB0) is used to provide the clocking pulse both to the chip and the CNT line on the port. We could also use the CNT line by itself to provide the clocking pulses but this would require us to use the built in timer. We do not want to use this timer at this point. The timer will be used in other interfacing projects where we will demonstrate the numerous functions it is capable of performing.



This section is where to place the transducer or circuit. To test, insert a 10k ohm pot between the +6 volts and ground. The wiper is connected to pin 2 (analog in). By varying the pot we vary the corresponding voltage on pin 2. The range is from 0 to 6 volts.

Figure Three

PROGRAM

Type in the program and run it. Vary the control knob on the pot and observe the results on the screen. The numbers represent the approximate digital equivalent of the voltage on pin 2. If you have a volt-meter handy you can connect the meter between pin 2 (analog in) and ground to verify the correlation of volts to the digital readout. Remember, your voltage step for this circuit is 6v/255 = .0235 volt per step. (Please see lising on page 62.)

RESOLUTION

Although the resolution is fixed at 8 bits (255 steps) the voltage span being measured can be adjusted within limits using the Ref+ (pin 1) and Ref- (pin 3). See chip pin out.

A/D chips on the market are identified by their resolution and interface method. Most A/D chips are parallel interfaced and these can also be used with the Amiga parallel port. The common resolutions available are 4, 6, 8, 12 and 16-bit resolution. Typically the cost of a chip is directly related to its bit-resolution and conversion speed. The higher the bit-resolution and the faster the chip the greater the cost. I would advise sticking with 8-bit conversion resolutions until you have more experience working with these types of circuits.

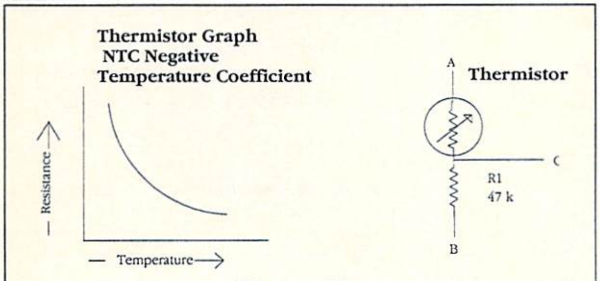


Figure Five

TRANSDUCERS

By substituting different sensors (transducers) for our testing pot, we can have the computer sense and measure light, heat, or anything else that a transducer can be made to detect. The three transducers we will work with are all variable-resistor types which will detect (separately) heat, light, and toxic gas. As each transducer detects its target, its resistance will change. This will cause a corresponding change of voltage across the transducer. This, in turn, will be noticed as a change on Pin 2 of our A/D chip and will be displayed in the same way that turning the pot was previously displayed.

LIGHT

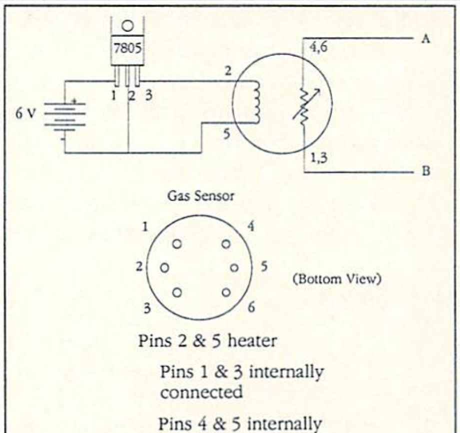
Cadmium sulfide (CdS) photocells, (Radio Shack PN# 276-1657) respond to the intensity of light that falls on them. Their resistance is greatest in complete darkness, and decreases in proportion to the light made available. Examine Figure Four—C1. This shows the simplest method of connecting the photocell into the circuit.

The disadvantage in this particular circuit is that we are utilizing just one half (128-255) of our resolution (0-255). We can easily correct this situation (see Figure Four—C2 by adding two resistors. These two resistors make a voltage divider that changes our REF- from) 0 volts to 3 volts. This in turn changes our volts per step (ref+ minus ref- = ref voltage) 6-3 = 3volt. Using the new ref voltage we get 3v/255 = .0118 volts per step. With circuit C2 we are reading voltages between 3 volts (ref-) and 6 volts (ref+). This gives us full scale operation with the photocell.

Now that we have a method of measuring light intensity, what are some applications for this device? If you are a photographer and do your own printing you could use this as an exposure meter for your enlarger. In the high-tech end of applications, a spectrophotometer is possible. Spectrographic analysis is a method used by scientists to determine the composition of unknown compounds. This technology is also responsible for determining the composition of the sun and stars.

HEAT

To measure temperature simply replace the photocell with the heat transducer (thermistor) in Figure Four—C2. The thermistor is an NTC (negative resistance coefficient) type, which means it decreases its resistance as the temperature increases. See Figure Five. Resistance at 25 degrees C (77° F) is 10,000 ohms. Maximum operating temperature is 150° C (302°F).



Pins 2 & 5 heater

Pins 1 & 3 internally connected

Pins 4 & 5 internally connected

Figure Six

The resistor (R1) which is in series with the transducer is suitable for sensing ambient room temperatures and above. To change the temperature scale and improve its response in the 0° to 120° F range, replace R1 with a 47K resistor.

Note: Although we are changing the reading range of temperatures by changing the resistor R1, the volts per incremented step and the voltage reading range (on pin 2) remain the same. The only way to adjust this is by changing the voltage divider resistors. If you should decide to change the voltage divider make sure to remain within the range detailed in the spec sheet and pin out description.

Calibration is necessary before using this sensor for any critical operation. One method of calibration is to submerge the sensor first in ice cold water then in boiling hot water marking each readout. The first number obtained is the equivalent of 32°F, while the second is 212°F. The most obvious application is an electronic thermometer and thermostat control.

TOXIC GAS SENSOR

The toxic gas sensor responds to a large number of airborne compounds. Its operation is similar to the thermistor in that as the sensor detects compounds the resistance of the device decreases.

You will notice in Figure Six (the schematic for the toxic gas sensor), that we

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are using a 7805 IC. The 7805 resembles a transistor but it is actually a 5 volt regulator. The 7805 will provide a 5V voltage source for our circuit from any number of battery voltages. You may use this regulator in the main circuit to trim the 6 volt power to 5 volts (to keep the voltage closer to the design specs for the A/D chip).

Examine Figure Seven. Pins 2 and 5 of the gas sensor are connected to an internal heater coil. Pins 4 and 6 of the transducer are internally connected as are pins 1 and 3. When you make your solder connections to the sensor you need only connect to one pin of each pair. Polarity isn't important for either the heater coil or sensor, any way you connect the wires the unit will function properly. You may notice that the sensor feels quite warm when operating, don't be alarmed, this is normal and is a result of the internal heating coil.

Change R1 in Figure Four—C2 to a 47K ohm resistor and connect the circuit as shown. Since the transducer has been in storage prior to your receiving it, it will require an initial 2 minute warm up period. This warm up period will decrease with use. After the warm up period has passed you can test the sensor with a number of household items. I first used a butane gas lighter, by releasing gas by the sensor (unlit), the sensor reacted by immediately jumping from a base line of 0 to 255. By breathing on the unit it will detect the carbon dioxide you exhale. You can test and experiment with other items such as cleaning fluids. You can use the toxic gas sensor for an automatic ventilator control or a home gas leak detector and alarm.

•AC•

Listing One

```
ddr =  12575489&  ' cia #2 port b
dr    =    12574977&  ' cia #2 port b
sdr   =    12573696&  ' cia #1 serial
                          data register


' set up ddr POKE (ddr), 1
start:
FOR t = 0 to 7
POKE dr,1
POKE dr,0
NEXT t
PRINT  PEEK (sdr)
GOTO start
```

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Part		Cost	Source
Serial A/D Chip	PN# TLC548	$12.00	Images Co.
Cad Photocell	PN# 276-1657	$ 1.98	Radio-Shack
Toxic Gas Sensor	TGS812 or equiv	$10.50	Figaro Eng.
47 K	PN# 271-1342		Radio-Shack
10 K	PN# 271-1335		Radio-Shack
7805 Voltage Reg	PN# 276-1770		Radio-Shack
NTC Thermistor	PN# KC006N-NC	$1.94	Digi-Key

Misc- 6V AA battery holder & batteries —Radio-Shack

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•*The First True Amiga to Amiga Ethernet Network Arrives*•

Just hours before this issue went to press, we received a new product from Hydra Systems of England—AMIGANET, a high-end, Ethernet networking system for the Amiga. Included with the system was a DMA plug-in board, ThinWire Ethernet™ RG58 thin Ethernet coaxial cabling, and installation software. After muddling through the manual, and a relatively simple and straightforward installation, we were up and running in a few minutes. It's HOT!

NO SERVER REQUIRED

AMIGANET is Ethernet Version 2-compatible, and is fully compliant with IEEE 802.3 standard types A and B. Separate versions are available for the 500 and 2000 series. In addition, Hydra Systems has announced a soon-to-be-released adaptor for use with the A1000. AMIGANET can be implemented with standard Ethernet (Type A) cabling, or the less expensive ThinWire Ethernet™ RG58 "Cheapernet" (Type B) coaxial cable. AMIGANET is the only Amiga Ethernet network to offer logical connection to shared (remote) hard disks and floppies as well as the serial and parallel ports. It's just like being there. It's a server-less network!

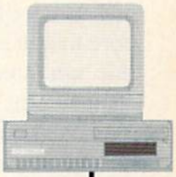
AMIGANET also includes the ability to talk (chat) with other users on the network, and the ability to access remote printers and devices. Another promising feature is a high-speed unidirectional interactive "pipe" mechanism, which passes real-time data at a high rate between AMIGANET nodes. (Did I hear someone say ARexx port?) All of this power can be accessed with icons or through the CLI.

RAW NETWORK HORSEPOWER

The best part about AMIGANET is its blazing speed. AMIGANET boasts a 16-bit data path with a 10-megabaud transfer rate using a 16K buffer. This translates into an instantaneous transfer rate of approximately 1MB/sec. The AMIGANET board is DMA and can directly access CHIP and FAST RAM. The DMA sequencer has a 16-MB address range.

Future developments for AMIGANET include support for TCP/IP and file servers. Novell client software is now being written and is slated for a February '90 release. We hope to put AMIGANET through the paces, and give you a full report next month.

The A2000 board retails for $797.00. Pricing for the A500 and A1000 systems will be slightly less. For information regarding North American distribution, contact Suresh or Katherine at RCS Management, 2075 University Street, Suite 1712, Montreal, Quebec, Canada H3A 2L1. Telephone: (514) 288-7825; FAX: (514) 845-1472. Inquiry #201.



— by Ernest P. Viveiros, Jr.

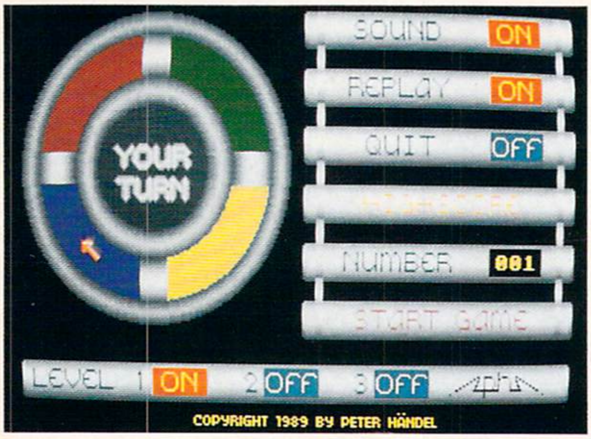
PD Serendipity

Insight into the World of Freely Redistributable Software for the Amiga

by Chip Morrison

• SENSOPRO •
(FRED FISH DISK #283)

SensoPro is a freeware program written by Peter Handel from West Germany. This version was released to Fred Fish for distribution in his collection. Anyone else interested in distributing this program in their PD collection must first contact Peter. His address is on the intro screen in the game.


SOUND ON
REPLAY ON
QUIT OFF
NUMBER 001
LEVEL 1 ON 2 OFF 3 OFF
COPYRIGHT 1989 BY PETER HÄNDEL

'Simon'-like: Peter Handel's SensoPro

LAYOUT

SensoPro is similar to the hand-held electronic Simon game. The game screen consists of a round disc with four light pads on it. Each pad is of a different color and has a different note that is played when lit. Down the right side and bottom of the screen are several gadgets that allow you to control different aspects of the game.

GAMEPLAY

The object of the game is to click on the pads in the same order as the computer. Initially the computer will randomly pick one pad to light. You would then click that same pad. The computer then picks another pad. You must then repeat the sequence from the beginning. This is easy at first, but progressively becomes harder as the list of pads to remember grows longer. Eventually you will foul up and pick the wrong pad; the game then ends.

OPTIONS

SensoPro has many features of a commercial program. Among these is a catchy rock and roll song that plays in the background before a game begins. Also, there are professional-looking graphics, not to mention the nice double-fade from the intro/instructions screen to the game screen.

There are several gadgets that you can select. You can turn sound on or off with the Sound gadget. The music only plays at the beginning of the game and in between games.

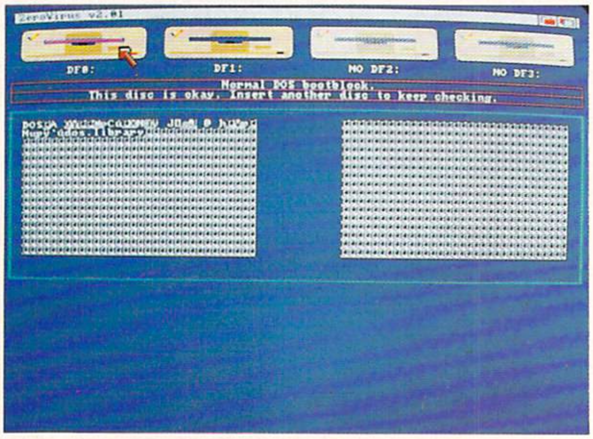
The Replay gadget will make the computer replay the last sequence in case you missed it the first time. You can only Replay each sequence one time.

There are three Level gadgets. Each allows you to select a different level of difficulty for the game you are about to play. The Start Game and Quit gadgets do just as they imply.

HI-SCORE

There is also a hi-score list to record your new scores. This way you can show your friends that you really did make it to 99 lit pads (the maximum number).

SensoPro is another quality PD game. If all of the PD games were gathered together they would make a very nice collection of free games for the Amiga.


Normal DOS bootblock.
This disc is okay. Insert another disc to keep checking.

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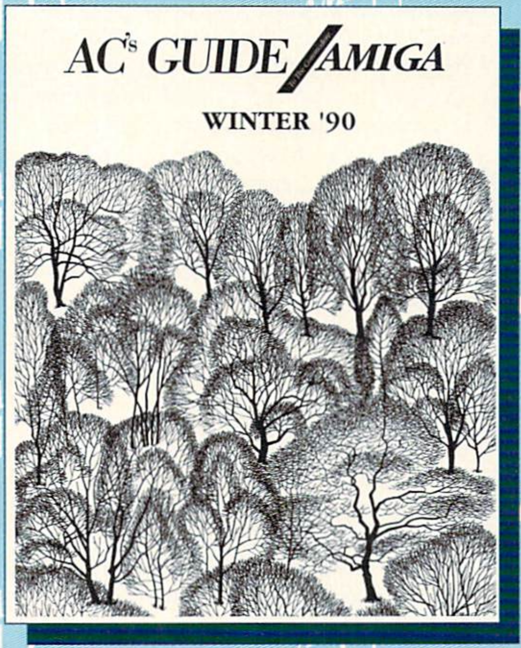

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Poor Person Software
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Palo Alto, CA 94306
(415)-493-7234

Circle 127 on Reader Service card.

(Resizing, continued from page 38)

docs on this program. A very nice shareware product.

You should be able to get either or both the sector editors mentioned in this article through a local user's group or from a BBS. Newzap is available on Fred Fish disk 164; DiskX is on disk 158. I couldn't find Clickdos on a Fish disk. If you don't have a modem or user's group, send me a disk with some of your good stuff on it, and self-addressed stamped envelope with 45 cents postage. I'll send back Newzap, Clickdos, DiskX and whatever other good stuff I have.

The purpose of this article has been to give hands-on familiarity with sector editors. I recommend reading some or all of the references listed above. Sector editing is a lot simpler than I thought it was going to be when I started. I hope you feel the same way.

Now, picture yourself at the next user group meeting standing around looking nonchalant as you toss out the line, "I was customizing my Workbench with a sector editor the other day and..." Instant wizard status. Oh, and if there is a simpler answer to re-sizing Shell/CLI windows, don't tell me. I'm having too much fun with the sector editor.

•AC•

(PD, continued from page 64)

'LINER (FRED FISH DISK #285)

'Liner is a freely redistributable program written by David Schreiber. David got sick of trying to write an outline in his word processor, so he wrote 'Liner. Necessity is the mother of invention.

WHAT IT DOES

'Liner allows you to easily create outlines. It will automatically keep track of the numbering and indents. It has all the basic word-processing features. And 'Liner is straightforward, allowing you to concentrate on your outline and not how the program works.

FEATURES

'Liner allows you to load and save your outlines. You can save in either outline format or ASCII. This would allow for editing in a word processor later (if needed) or for use in a desktop publishing program. Copy, Cut, Paste, and Erase are all available. The Copies and Cuts are sent to the Clipboard for use with other programs such as NotePad (comes with all Amigas on the Extras disk).

The ability to switch between interlace and non-interlace is also provided. This is handy because it allows 48 lines of text to be displayed on the screen at once instead of the normal 24. One reason this is important is because 'Liner can highlight a maximum of one screen.

'Liner is a straightforward, easy-to-use program that has many features of the commercially available outline programs. One feature that some commercially available outliners have that 'Liner doesn't is the ability to compress areas of the outline out of sight, making for easier reading on large outlines. It may have enough features for what you are doing.

VIRUS HELPERS

VIRUSX 4.0 & ZEROVIRUS 2.01 (FRED FISH DISK # 287)

VIRUSX 4.0

VirusX 4.0 by Steve Tibbets is an update to version 3.20 The new version checks for more viruses than the old version. Version 4.0 also checks for the Xeno virus that was mentioned in last month's "Virus Alert" (AC V5.1, page 2).

VirusX runs in the background and checks each disk inserted for known viruses. VirusX 4.0 will also check memory for known viruses when it is first run.

ZEROVIRUS 2.01

ZeroVirus is another nice virus checking program. This version is freely redistributable and was written by Jonathan Potter. ZeroVirus III is an update to this version and will be a commercial product. It is available from Micro Momentum, Inc. (See this month's "New Products and Other Neat Stuff").

ZeroVirus is an integrated virus checker and killer with bootblock save/restore feature. It can find both bootblock and file-based viruses.

One feature ZeroVirus has that other virus checkers do not is the use of brainfiles. ZeroVirus uses brainfiles to recognize what is and what isn't a virus. There are two distinct benefits to this method. One is that, once a new virus is found, only the brainfile needs to be updated (as opposed to rewriting the entire program).

The second is that ZeroVirus can tell if a bootblock is non-standard (as other virus checkers will), and it can also tell you if the non-standard bootblock is safe. For instance, if you have a disk that has a text-displaying program on the bootblock, ZeroVirus will tell you that it is a text-display program. Other virus checkers will tell you that the bootblock is non-standard, leaving you to believe that it is probably a virus.

The brainfiles that ZeroVirus uses can be edited with an on-line brainfile editor. This means you can make ZeroVirus learn new bootblocks (whether they are viruses or useful bootblock programs).

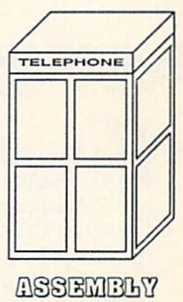
ZeroVirus can also be iconified. This means that you can run it from the Workbench and check for viruses, etc. When you are done, ZeroVirus allows you to iconify it. This causes the whole program to change to a small title bar that displays the time and memory usage. But the program is still fully functioning in the background. It will continue to check memory and disks inserted for viruses. And if you activate the title bar and click the right mouse button, the program reopens to a full screen!

Both VirusX 4.0 and ZeroVirus are a requirement for anyone who swaps disks with friends. These programs can save you major headaches down the road.

•AC•

CALLING!

Assembly Language from BASIC



by Martin F. Combs

AmigaBASIC is relatively speedy for an interpreted language, but eventually most BASIC programmers develop a yearning for more speed. This yearning applies particularly to those users who get their thrills from recreational mathematics problems such as those found in the Computer Recreations column of Scientific American. One solution is to go to a compiled BASIC, and there are some good fast compilers out there. Another possibility is to learn a new language such as Pascal, Modula 2, or C. The ultimate speed demon of languages is Assembly language, with some programs running on the order of 100 times as fast as BASIC, but only a dedicated programmer would write stand alone programs in Assembly language. There is, however, an alternative.

In any program which needs significant speeding up, the portion of the program which uses most of the time is usually found to be a loop of a few lines of relatively simple code, which the computer executes over and over again perhaps thousands of times. Rather than writing an entire program in a new language, write just the loop in Assembly language.

Chapter 8 of the AmigaBASIC Manual describes the keywords available in the BASIC language, including the keyword CALL. CALL has three uses, one of which is "calls a machine language routine at a fixed address". The description of CALL goes on to say a number of things which may not be understandable to the average AmigaBASIC programmer. This article provides a number of hints which should at least get the reader started, assuming the reader has a book on programming the 68000 computer and would like to get some hands-on experience. The Motorola 68000 is the guts of the Amiga, as well as of several other well known computers. "Programming the 68000" by Steve Williams, printed by SYBEX is a good example. There may be some genius out there who can learn Assembly language programming by reading a book, but most mere mortals find "learning by doing" much easier.

First look at the BASIC statement "CALL name". When the CALL statement is executed, the Amiga shoves the contents of the variable "name" into the program counter (PC). Whatever machine language routine happens to be at the address specified by the PC begins execution. Therefore "name" must contain an address, which means that name must be a variable able to carry an address. Single or double precision floating point will do, as well as the long integer type. A regular integer is not large enough. Call this variable startcode.

The variable startcode must point to the start of the machine language program. Assume that an Assembly language program had been written, having assembled the program into a sequence of byte, (that is numbers all of which must be in the range from 0 to 255), and those numbers have been converted into a bunch of DATA statements which are part of the BASIC program. That's one way to do it, but there are others.These numbers then need to be located where the program can find them. The Amiga has a way of moving stuff around in memory without letting the user know, in the sometimes mistaken idea that it is not important. One way is to POKE the numbers into a string, but the Amiga does some peculiar things to strings. It's preferable to POKE them into an integer or long integer array. Dimension the array big enough to hold the machine language program and in addition, big enough to hold any information that may get passed to or from the program. Remember that 2 of those numbers from 0 to 255 will fit into one element of an integer array, or 4 of them into an element of a long integer array. Here is a fragment of a BASIC program which will do the job:

```
DEFLNG a-z : DIM p(30)
j=0:k=0
 startcode=VARPTR(p(10))
again:  READ j
IF j=999 THEN loaded
POKE  startcode+k,j
k=k+1 : GOTO again
loaded:   REM   BASIC program continues here
REM: DATA statements must be somewhere in the program.
```

Since all variables and arrays have been defined to be of the long integer type, each element of the p( ) array will contain four DATA items. A machine language program of up to 84 bytes could be held here, since POKEing starts at p(10) and must stop at p(30). The array can be made much bigger, of course. In the fifth line, 999 is the EOF or end-of-file signal, which will be the last item in the data statements. j=0:k=0 is a statement initializing variables j and k, and is essential even though BASIC would assign a zero value to them when first encountered if they had not been initialized. If this is not done, the Amiga will make room for them in the variable list when it first encounters them, probably changing the location of the p( ) array in the process. This would be disastrous, because startcode would then hold the wrong value. The usual result is another one of those frustrating Guru messages as the machine wanders off into never-never land. Now is a good time to mention that if the CALL statement is used frequently, you will be seeing a lot of Guru messages. They cannot inflict permanent damage, but will waste a lot of time. You can always reboot the machine. The reason the POKEing started at p(10) rather than p(0) is because readily available variables p(0) through p(9) can pass parameters to and from the machine language program conveniently.

Once the statement CALL startcode is executed, the PC is set to the value held in startcode and points to the first item of data. What should the start of the machine language program do? Probably the first thing that should be done in the Assembly language program is to protect the information in the various data registers. The 68000 computer has 8 data registers, known as d0 through d7, and 8 address registers known as a0 through a7. According to the various Amiga manuals it is safe to use d0, d1, a0 and a1 without protecting them, but why take a chance? Here is a simple Assembly language program:

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```
1     movem.l    d0-d7/a0-a6,-(a7)
2     lea        -46(pc),a5
3      move.l     d7,(a5)
4      move.l      60(a7),4(a5)
5      move.l      64(a7),8(a5)
6      move.l      68(a7),12(a5)
7      move.l      72(sp),16(a5)
8      move.l      76(sp),20(a5)
9      move.l      24(a5),28(a5)
10     movem.l     (a7)+,d0-d7/a0-a6
11    rts
12    nop
13    end
```

The line numbers above are not needed by the assembler but are there for easy reference. The first instruction pushes all registers except a7 onto the stack using the pre-decrement mode. Any good book on the 68000 will clarify terms like "pre-decrement mode". In other words registers are being pushed onto a stack which uses register a7 as the stack pointer (sp). Notice that a7 and sp mean the same thing to the assembler program. Line 1 is a bit of overkill, since many of the registers are not used in the program, but it's still a good idea to start a program this way. I never know what registers I will be needing until after I have used them, since my programming technique is to lay down some code first and get organized later. It's not what computer scientists teach as structured programming, but it does make life interesting. Line 10 restores the registers to their original condition before leaving the program.

Line 2 is a bit confusing. Its effect is to load the address which is 46 less than the present value of the program counter into register a5. Six of that 46 comes from the fact that the program counter started at the location of p(10), that is at the start of the program, processed line 1 which is a 4 byte instruction, and then was increased by 2 more in processing line 2. The other 40 come from the distance from p(0) to p(10), with every element of the array taking 4 bytes. Now register a5 points to p(0).

In line 3, the contents of register d7 are moved to (a5), the location pointed to by a5, and a5 points to p(0). Why are the contents of d7 of interest? When calls of the form call startcode(a) or call startcode(a,b) are made, the value of *a* ends up in d7, which can be convenient. For calls of the form call startcode(a,b,c,d), check the results and discover the problem. If the call is call startcode(a), then the value of *a* is also on the stack somewhere, in fact the whole list of variables will be on the stack where they are accessible.

Line 4 moves the contents of the location 60 greater than that pointed to by the stack pointer into 4(a5), which is four greater than (a5) and therefore must be p(1). Why 60 greater? Since the Assembly language program started to run, 15 registers were pushed onto the stack by line 1. Therefore, 60(a7) must be what the stack pointer was pointing to when the program started, and the contents should be some hint to the computer as to how to get back to BASIC when asked to do so by line 11, the rts or RETURN statement. When the complete BASIC program is eventually run; it is noticeable that p(1) holds a large number, presumably an address, but it will only be of an academic interest to the user.

Line 5 moves the contents of 64(a7) into p(2) for future examination. This is the value of variable a, which is the last thing that gets pushed onto the stack before the call is made. It turns out that if the call statement includes a variable list, the variables get pushed onto the stack in order from right to left. Lines 6, 7 and 8 move the remainder of the variable list into p(3) through p(5).

Line 9 illustrates another non-standard but still highly effective way to pass variables to an Assembly language program. In this example, a copy of the contents of p(6) are moved to p(7), but the contents of any of the array elements from p(0) to p(9) could be passed to the Assembly language program to be used as needed. It may be easier to pass variables in both directions by this method rather than on the stack, since the status of the stack can be rather confusing at times.

Lines 10 and 11 have been discussed but line 12 needs a bit of explanation, which brings up the subject of assemblers. Spending $20 or so to buy a book on how to program the 68000 is not a major investment, but it is a bit much to expect casually interested programmers to buy assemblers to find out if they really like programming in Assembly language. The alternative is to obtain a public domain assembler. The a68k program on Fred Fish disk #110 is an outstanding assembler, easy to understand and to use. Its output, a machine language file, can be inputed into a simple program which manufactures DATA statements. An adequate BASIC program that does this is listed at the end of the article. (Although the a68k assembler will get the job done, eventually dedicated Assembly language programmers need to know how to access the built-in routines of the Amiga, i.e. the "include" files will be needed, which means buying an assembler. That is an entirely different subject. Don't worry about it until a much better understanding of the Assembly language is obtained.) Since the a68k assembler assumes that the program being converted to machine language will be a stand alone program, it adds some code to assure that this happens, both at the beginning and the end of the program. This code must be stripped off if the program is to be called from BASIC; this code is easily recognized. The code for line 1 is 72, 231, 255, 254 and any code before this should be discarded. Back to line 12. The code for nop (no operation) is 78, 113. Just put line 12, or several copies of line 12, at the end of the code and it will be obvious where the unneeded code at the end starts. Not all programs end with the rts statement, but the 78, 117 code can be recognized as a rts instruction.

You will probably want to make many calls to a machine language routine, using a loop, which will probably grow out of necessity. The value of startcode can be reestablished each time through the loop, but that is a waste of time if it doesn't change, and if careful, it won't. The trick is to initialize every variable (string or numerical) that is being used in the loop before establishing the value of startcode. Initializing means setting the variables to something even if the value will be changed later. If using a string known as a$ then put the assignment statement a$="" before the startcode=VARPTR(P(10)) statement. Repeated encounters with the Guru, might be solved by putting the startcode statement in the loop. If this works the source of the problem has been narrowed down.

The terms Assembly language and Machine language are often used somewhat interchangeably. Assembly language is a relatively easily understood language which is written on a text editor such as the ED program provided by Commodore. There are many more efficient text editors available commercially or through the public domain. My favorite is dme by Matt Dillon. (If you are interested in public domain software, do yourself a favor and check into dme, dmouse and shell, all by Matt Dillon.) The assembler processes this ASCII file, creating a file which is the machine language program. Typically one Assembly language instruction together with its operand or operands, that is one line of Assembly language, will be assembled into from two to ten bytes of Machine language, averaging about three bytes per line.

Here is the total BASIC program:

```
DEFLNG a-z
DIM p(30)
a=1111 : b=2222: c=3333 : d=4444
p(6)=5555
j=0 : k=0 : checksum=0
startcode=VARPTR(p(10))
again: READ j
   IF j=999 THEN loaded
    checksum=checksum+j
   POKE startcode+k,j
   k=k+1 : GOTO again
loaded:
IF (k<>52) OR (checksum<>4029) THEN
   PRINT "Checksum or bytecount error": STOP
END IF
CALL startcode(a,b,c,d)   REM: Experiment with this
statement.
FOR i=0 TO 7 : PRINT p(i);:NEXT
END

DATA 72, 231, 255, 254, 75, 250, 255, 210
DATA 42, 135, 43, 111, 0, 60, 0, 4
DATA 43, 111, 0, 64, 0, 8, 43, 111
DATA 0, 68, 0, 12, 43, 111, 0, 72
DATA 0, 16, 43, 111, 0, 76, 0, 20
DATA 43, 109, 0, 24, 0, 28, 76, 223
DATA 127, 255, 78, 117, 999

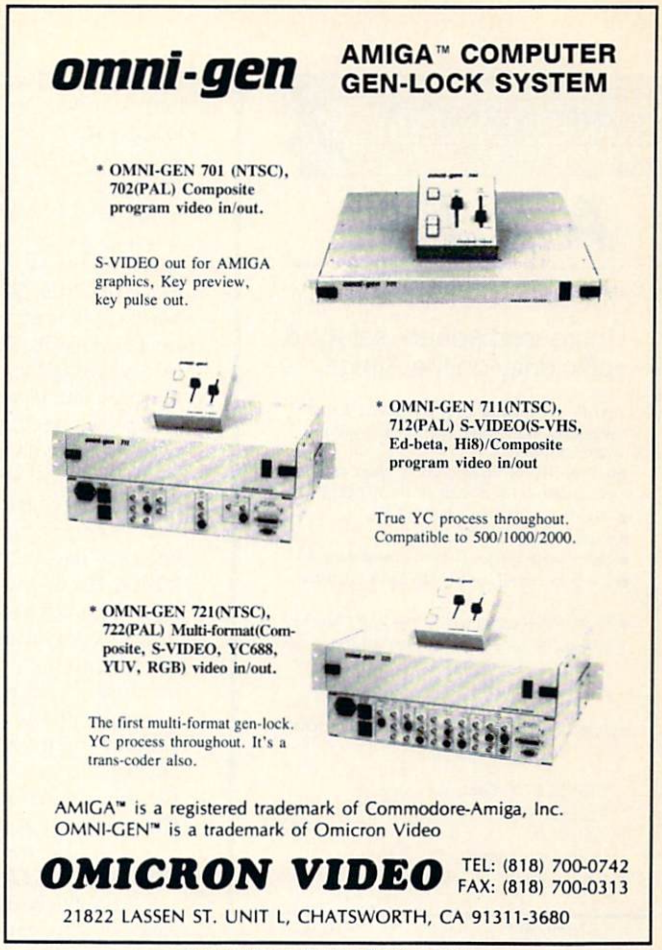
'ASSEMBLY  LANGUAGE  LISTING
'                    movem.l  d0-d7/a0-a6,-(sp) save
registers
'                    lea      -46(pc),a5        point to
start of array
'                    move.l   d7,(a5)           d7 to p(0)
'                    move.l   60(a7),4(a5)      (sp) to p(1)
'                    move.l   64(a7),8(a5)      ? to p(2)
'                    move.l   68(a7),12(a5)     ? to p(3)
'                    move.l   72(a7),16(a5)     ? to p(4)
'                    move.l   76(sp),20(a5)     ? to p(5)
'                  move.l   24(a5),28(a5)     p(6) to p(7)
'                    movem.l  (sp)+,d0-d7/a0-a6
'                    rts
'                    end
```

For the unbeliever, Assembly language programs definitely do run faster than BASIC programs, many times as faster. They also seem to take one hundred times longer to write than BASIC programs, mostly because they are much harder to de-bug. So why not have the best of both worlds by combining the two. Write most of the program in BASIC and just the highly repetitive stuff in Assembly language. The results will be amazing.

Here is the BASIC program to turn the output of the assembler into a file of DATA statements.

```
DEFINT a-z
INPUT "Enter name of object file. ",file$
OPEN file$ FOR INPUT AS 1
leng = LOF(1)
g$=INPUT$(leng,1)  : CLOSE
PRINT  "What name do you want for this file."
INPUT ".DAT will be appended.  ",outfile$
outfile$=outfile$+".DAT"
OPEN  "O",1,outfile$
i=1 : items=8     'number of data items per line
nextline:  d$="DATA"
WHILE i MOD items
   IF i>leng THEN d$=d$+" 999" : PRINT #1,d$: CLOSE : END
    d$=d$+STR$(ASC(MID$(g$,i,1)))+","
   i=i+1
WEND
d$=d$+STR$(ASC(MID$(g$,i,1))): i=i+1: PRINT #1,d$: GOTO
nextline
```

•AC•



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(Schmideo, continued from page 47)

area = better fidelity, decided to put the audio record and playback heads on the same rotating drum as the video heads. Now we have the same incredible tape-to-head speed ratio with our audio as we do with our video. A great idea but where on the tape do we store the sound? We could not use the same narrow track as the mono/ Dolby stereo sound or we would lose compatibility with all previous and current machines.

Remember, I did say that this engineer was very clever. The idea that was finally decided upon is the method that is currently in use. The two audio tracks are encoded (multiplexed) into the video signal and actually stored on the full width of the tape at the opposite angle to the video signal and on a deeper layer of magnetic particles. Voila! Faster speed and larger recording area. Perfect? Maybe not.

Since this is a totally different record and playback system from the mono/ Dolby stereo systems on previous machines, a tape recorded on a Dolby stereo machine, for example, would have no Hi-Fi tracks, and, therefore, no sound would be heard when played on a Hi-Fi machine. The reverse is also true. A tape recorded with only Hi-Fi sound would have no soundtrack playable by a machine with mono or Dolby stereo heads. In order to solve this final problem of compatibility, all Hi-Fi machines are also equipped with Dolby stereo record and playback heads. Therefore, when you play a tape you can listen to the mono or Dolby soundtrack, if that is all the tape has, or you can listen to the Hi-Fi soundtrack, if there is one. For backwards compatibility, when you record on a Hi-Fi VCR, you are actually recording two soundtracks at once. You see? This way you can listen to the Hi-Fi track when you play it back, but your stingy neighbor with the ten-year-old VCR will still be able to listen to the soundtrack as well (if you loan him the tape).

The average Hi-Fi VCR has a record and playback range of approximately 20 to 20,000 Hz (using the Hi-Fi tracks). That's right! The full range of human hearing. In fact, it is only the signal-to-noise ratio and the resulting dynamic range that set this level of sound quality apart from that of compact discs. And the difference is actually relatively small. (Note: serious audiophiles were making copies of their favorite albums on Hi-Fi VCR's years before CD's became popular.)

THE NAKED TRUTH

So, back to why I brought this all up. Any of you readers who are into Amiga video either have or will need a VCR and/ or camcorder. Both VCR's and camcorders are available with three levels of sound recording and playback quality. Most of the low end home VCR's and the majority of all camcorders in existence use mono sound only. An increasing number of units are now available with Dolby stereo (sometimes known simply as stereo). All of the top end VCR's and camcorders offer Hi-Fi sound. Now we are getting to that pet peeve.

An ever-increasing number of VCR's and particularly, camcorders, are available with a feature called audio dub or dubbing or even over-dubbing. This is particularly true of the better models. Audio dubbing is the ability to record or rerecord a soundtrack on videotape independently of the video signal. For example, you tape your family at the beach and when you go home you would like to "dub" a narrative track onto your tape. To do this without disturbing the already-recorded picture, you will have to have a machine with the audio dub feature.

The more clever among you will ask,"if the Hi-Fi track is mixed in with the video signal, how can I rerecord it without changing the video portion of my tape?" The answer? You can't! This is the crux of my peeve. I constantly see references to VCR's and camcorders with "Hi-Fi sound and Audio Dubbing". Apparently I am not the only one who finds this misleading. A good friend of mine, having recently bought a camcorder with Hi-Fi sound and...you guessed it, audio dubbing, asked me why the quality of the sound recorded with the picture was so good, and yet, when he dubbed over the sound, no matter what he did, the quality just wasn't the same.

DON'T BE FOOLED

In my friend's case, it not only said "Hi-Fi Sound with Audio Dub" both on the box and in the manual, the salesman had specifically pitched him on the Hi-Fi quality of the overdubbed sound.

Does this mean that you should avoid audio dub like the plague? Absolutely not. It is an extremely useful feature which can, at times, become invaluable. It can really be very hard to live without. Just remember, when you are dubbing sound using this feature, you are dubbing onto the Dolby stereo tracks. This means you are back to that 100-10,000 Hz sound quality. So plan accordingly.

If you will be using semi-professional editing equipment (most of which will allow simultaneous playing of the Dolby Stereo [or, linear tracks] and the Hi-Fi tracks) just remember to put the voice on the linear track and the music or sound effects on the Hi-Fi tracks.

Also remember that when you narrate over that trip to the beach you probably will not be able to listen to the sea gulls at the same time you are listening to the narration. Again, this is because most consumer equipment will not allow playing of both types of soundtrack at once. There is a bit of a workaround to this in that with some VCR's and camcorders the audio dub feature will allow you to independently rerecord the right and left linear tracks. Remember, while you originally recorded those sea gulls on the Hi-Fi tracks of your camcorder, you also recorded them on the left and right Dolby stereo tracks. Therefore, if your machine will allow you to overdub, say, the right linear track without disturbing the left, then you can play those linear tracks as your finished product, listening to the narration and the sea gulls at the same time.

Hopefully, this information will help keep you from being flimflammed by either overzealous boxes or overexuberant salespeople. And please, if any of you go on to write books about Desktop Video, do not mention Hi-Fi and audio overdub in the same sentence without explaining that they are not related!

•AC•

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Benchmark Modula-2 Source Level Debugger

by Steve Faiwiszewski

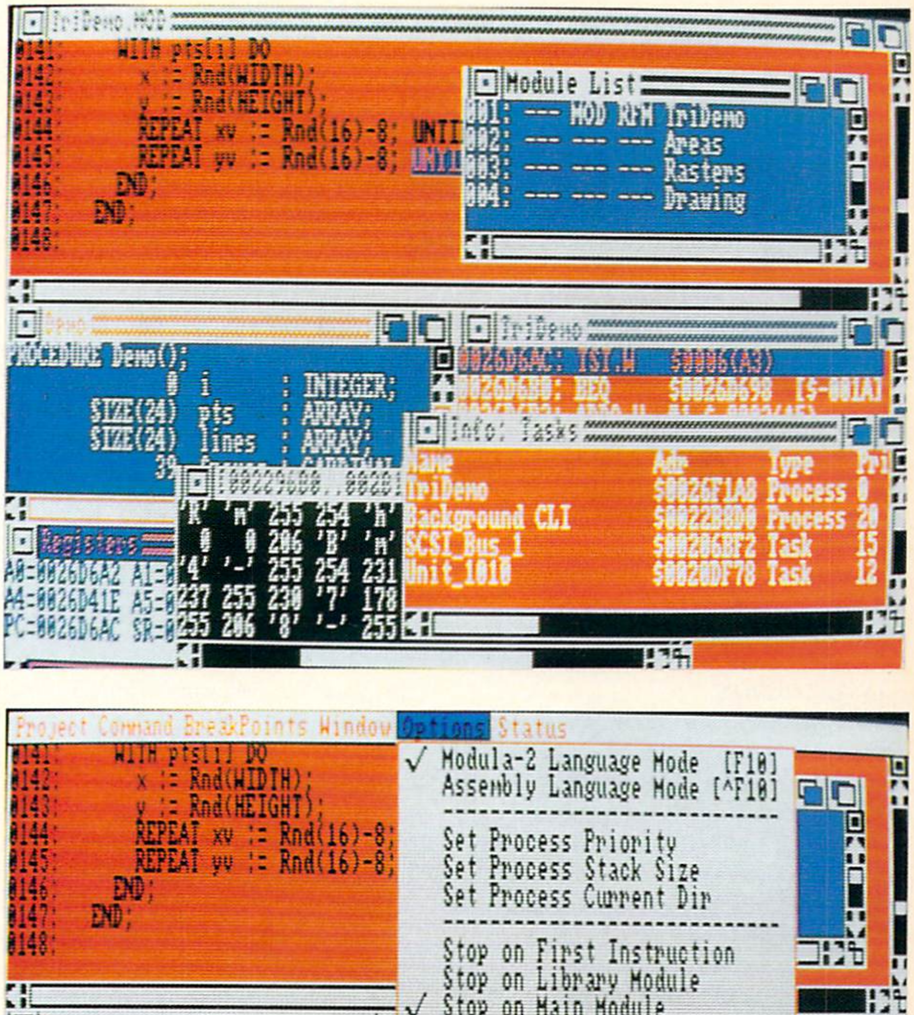
Over a year ago I had a conversation with Leon Frenkel of Avant-Garde Software, trying to convince him of the importance of a source level debugger for his Benchmark Modula-2 compiler. He was not impressed at the time, claiming that the usefulness of a debugger would be limited. Well, I'm glad Leon has changed his mind, and now he has produced one of the best debugger packages I've seen anywhere.

WHAT IS A SOURCE LEVEL DEBUGGER

For those of you who may not know, a source level debugger is a tool which allows you to troubleshoot a developing program. It lets the programmer single-step through program statements, examing and modifying variables. A source level debugger differs from a symbolic debugger in that while the symbolic debugger operates at the assembly language level, a source level debugger works at the original high-level language mode. Thus, a source level debugger is much more conducive to high-level language thinking, without having to get bogged down by compiler-generated assembly code.

THE PACKAGE

The Benchmark SLD package consists of a manual and one disk. The disk contains a few files, most important of which is the debugger, a new version of the compiler, and a module called PMD (both .SBM and .OBM files are supplied, naturally). The new compiler version is identical to the previous one, except that there is some additional debugger support. The PMD module is used if post-mortem debugging is desirable. Also included on the disk is a program called WBColors, which toggles the number of bitplanes in the Workbench screen between 1 and 2. Running with only one bitplane saves about 16K of CHIP RAM, so this is quite useful for owners of 512K system. Another included utility, M2Detab, is used to filter out tabs in source files. More about this tool later.



```
0141:      WITH pts[i] DO
0142:        x := Rnd(WIDTH);
0143:        y := Rnd(HEIGHT);
0144:        REPEAT xv := Rnd(16)-8;
0145:        REPEAT yv := Rnd(16)-8;
0146:      END;
0147:    END;
0148:
```

```
001: --- MOD RFM TriDemo
002: --- --- --- Areas
003: --- --- --- Rasters
004: --- --- --- Drawing
```

```
PROCEDURE Demo();
          0 i     : INTEGER;
   SIZE(24) pts   : ARRAY;
   SIZE(24) lines : ARRAY;
```

```
Name            Adr        Type     Pri
TriDemo         $0026F1A8  Process   0
Background CLI  $0022B8D0  Process  20
SCSI_Bus_1      $00206BF2  Task     15
Unit_1010       $0020DF78  Task     12
```

***Top:** Module List window displays all known modules.*

***Bottom:** The Option menu allows you to select options for the debugging process.*

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INSTALLATION

Installation is very simple. Simply copy the new compiler to where the old compiler was. Place the debugger into the same directory as the compiler, and copy PMD.OBM and PMD.SBM to the directory where you keep all the other support modules. You might also want to place one of the supplied configuration files in the S: directory under the name M2Debug.Config. The debugger will read this file upon startup, and set itself up accordingly.

PROGRAM PREPARATION FOR DEBUGGING

In order to be able to debug a program, that program must be compiled and linked in a certain way. The linker must generate source level debug info. This can be specified by using the '-g' option for a CLI-based link operation, or by issuing the command 'M-x set-m2-link-gen-sym' in the editor, specifying 'TRUE' for the source level debug info prompt. An easier way is to place the following command in the S:.emacs file:

```
(set-m2-link-gen-sym T F F)
```

In addition to the linking instructions, all modules which have to be debugged must be compiled with the reference-file option turned on. Again, this option can be invoked by using the '-g' argument for a CLI-base compile, or by using the 'M-x set-m2-comp-opt' command in the editor. In addition, this can be set via the M2Config utility.

Once the program is compiled and linked properly, it can be debugged by issuing the following command from the CLI:

```
[run] m2debug <ProgramName> <CommandLineArguments>
```

FENESTRATION (OPERATION WITH WINDOWS)

The Benchmark SLD is fully "intuitionalized". All commands are invoked through mouse clicks and menu selections. In addition, the function keys are used for activating certain menu selections. The SLD is quite similar to the MetaScope symbolic debugger in this aspect. Just as with MetaScope, numerous types of windows may be opened, and the number of open windows is limited only by the availability of CHIP RAM (see Picture One, for an example debugging session with many kinds of windows open). In addition to horizontal and vertical slider gadgets, each window also has an additional "destination" gadget, which is used for various kinds of navigation.

The SLD's power and flexibility stem from its window capability. The following window types are available: Source window - displays the Modula-2 source code. The next statement to be executed is highlighted in inverse video. A breakpoint can be placed at a source statement by simply double clicking on it. That statement will then appear in a different color, to denote it as a breakpoint.

• *Symbolic data window* - displays the variables' content. It's possible to display module global variables, as well as procedure local data. For variables of simple type, their type and actual value is displayed in the appropriate format. For variables of a more complex structure (array or record), only their size and type is displayed. To display a complex variable's content, simply double-click on it. If the variable is an array, the window will then display the individual elements. Similarly, if the variable is a record, the window then will display the individual fields.

For pointer variables, the window shows their address value. Double clicking on them causes the window to display the object pointed to (assuming the pointer is not NIL). Set variables (of type SET OF ...) are displayed as a hex number, which is really their bit pattern. Double-clicking on them causes the window to show the names of all possible set members. The members that are actually contained in the set are highlighted.

Pressing <BackSpace>, or double-clicking the top line of the window's display, will return the window to its previous state. Pressing Escape will restore the window to its initial state (showing the top level list of variables).

Variables may be modified by selecting them and then pressing F9. A requester will be displayed, showing the variable's current value and prompting for the new value.

• *Disassembly window* - displays the assembly listing of the source code. This is quite handy, as sometimes it's quite important to know what exactly is taking place. The next assembly instruction to be executed is highlighted in inverse video. As with the source window, breakpoints can be set in this window (by double-clicking on an assembly instruction), and they will appear in a different color.

• *Procedure call chain window* - displays a list of currently active procedures, with the most current active procedure on top. This shows you exactly how the program got to where it's currently at. This is also useful for navigation: selecting a procedure in this window (simply click on it), and then clicking on a source window's destination gadget will cause the source window to display the procedure's code. Similarly, clicking on a data window's destination gadget while a procedure is selected will cause the data window to display that procedure's local data.

• *Memory window* - allows you to display memory in all sorts of ways (as individual bytes, characters, strings, binary integers, reals, etc.).

• *Registers window* - displays all the CPU's registers. All registers may be modified by selecting them and pressing F9. A requester will appear, prompting for a new value. Of course, if you are about to change some register's value, you'd better know what you're doing.

• *Module list window* - displays a list of all known modules. For each module, the window displays whether it "knows" about the corresponding .mod, .def, and .rfm files. This window is useful for navigation: select the .mod or .def entry for a module, and then click on a source window's destination gadget to display the corresponding code. Similarly, select the .rfm entry for a module and click on a data window's destination gadget to display the variables declared in that module's .def file (this is a bit obscure, but it works).

• *Info window* - displays various useful things about the system, such as open libraries, devices, ports, etc.

• *Directory window* - displays directories and their files. I found this one pretty useless.

PROGRAM CONTROL

A debugger must have ways of controlling the program being debugged. The SLD has two types of 'Step' and 'Run' commands. The 'step into' command will execute one Modula-2 source statement and then stop. If the statement happens to be a procedure call, the debugger will step into the procedure and stop. The 'step over' command is similar, except that a procedure call is executed without stopping. Execution will stop as soon as control from the procedure. The 'Run' commands are similar to the 'step' commands, except that the debugger will keep executing source statements until the 'stop' command is issued. As with 'step', there is a 'run into' and a 'run over' command. Single stepping can be at the Modula-2 level, or assembly level, depending on a menu selection.

In addition to 'step' and 'run', there are two kinds of 'go' commands. The regular go command will let the program run unchecked. Control will return to the debugger only after the program terminates (by either executing a HALT, or by simply exiting), or when it encounters a runtime error or a breakpoint. The 'go with temporary breakpoint' command will place a temporary breakpoint at the selected source statement, and then issue a 'go'. The temporary breakpoint will be cancelled as soon as the program encounters it. At that point, control will return to the debugger.

As mentioned earlier, setting breakpoints is as easy as double-clicking on a Modula-2 source statement, or an assembly instruction. While all other source level debuggers I'm familiar with allow setting a breakpoint on a particular line, Benchmark's SLD goes one step beyond; it allows

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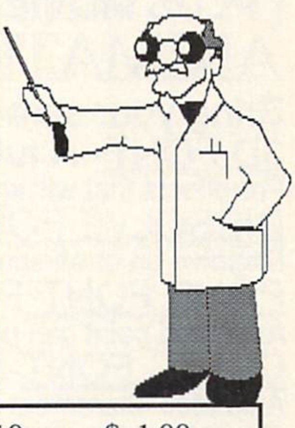

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breakpoints on source statement. That means, it can handle multiple statements on one line.

HANDLING OF CPU EXCEPTIONS (RUNTIME ERRORS)

The debugger should trap and handle any runtime error which results in a CPU exception. Such runtime errors include dividing by zero, array subscript out of bounds, and overflow (for example i := b - 4, where i is INTEGER, and b is a CARDINAL set to 3). I found the SLD a bit lacking in this area.

Single stepping into a statement which causes an exception (such as the CHK or Div by Zero) will cause the Amiga to crash. This is actually not Benchmark's fault; it will happen with all debuggers since the problem is with the Amiga DOS. This is briefly mentioned in the manual (page 4-12) in one short sentence, so it's quite easy to miss.

If division by zero of REAL numbers is encountered during a "go", the debugger will not single step after the exception. Instead, it will perform a "go" even though the user selects "step".

The debugger does not make a distinction between an array subscript, out of bounds error, and an overflow error. This is actually due to a "feature" of the compiler, and is not the debugger's fault; the compiler generates code that signals a CHK exception for both types of errors.

POST-MORTEM AND WORKBENCH APPLICATION BEGUGGING

The package comes with a new module which you should import into all your programs. The new module, PMD, will invoke the debugger in the event that a program encountered a runtime error. The debugger will load in the program's source and display the offending line and type of exception. Unfortunately, there is a bug which shows up if you try to single step past the end of the program (this is probably related to one of the problems mentioned above). Otherwise, the PMD/SLD combo works as advertised.

While the SLD can be run only from the CLI, there is a way to use the debugger with Workbench based programs. The trick is to import PMD and code an inline instruction at the beginning of the program to signal a trap. Once the program is launched from the Workbench, it will encounter the trap and invoke the debugger.

MISCELLANEOUS

There are a few other options worth mentioning. There are options for searching through memory or through source, including copying and filling memory blocks.

The Benchmark debugger is remarkably reconfigurable. At any given moment the user can save the debugger's current configuration to be used later. Items that can be customized include: screen and window colors, workbench vs. custom screen, interlaced vs. noninterlaced, how many and what kind of windows should be initially opened, etc..

There is an option to enforce version control, called "Verify .MOD File Dates". Enabling it means that the debugger will insist that the program being debugged was linked from object files (.OBMs) that are completely up-to-date. If you choose to use this option (as it provides more security), beware of the following pitfall. If you edit a source file, be sure to compile and link from within the editor, and then debug the resulting program, without first saving the editor's buffer to disk, the debugger will complain with the message "An '.RFM' and/ or '.MOD' file was not found for the program module".

DOCUMENTATION

There is not much to say about the manual. It is in the same format as all the other Benchmark manuals. While it has all the needed information, it's not organized very well, and there is no index. Basically, the only thing you can do to assure full knowledge of all the debugger's features, is to read the manual completely, thoroughly, and sequentially, since looking things up isn't easy.

ALL IS NOT ROSES

I guess nothing is perfect. Here's a list of my complaints:

—The debugger doesn't handle tab characters very well. As a matter of fact, it doesn't handle tabs at all. Tabs appear as a strange rectangular characters embedded in the source, and all the gorgeous indentation that you have painstakingly put into your program is completely missing. This is inexcusable, especially since the integrated editor inserts tabs, and has no option for "soft tabs" (inserting spaces when the TAB key is pressed). The debugger does come with a utility called M2Detab, which will filter out the tabs. M2Detab should be used on a module BEFORE the module is compiled.

—The debugger's file requesters are lousy! All you get is a simple string requester. In this day and age of ARP and other similar freely available file requesters (not to mention the one available in the editor!), not having a smart file requester is unacceptable. It IS possible to use the directory window to "sort of" function in conjunction with the file requester: select the desired file in the directory window, and then issue the command which puts up the requester. The selected file will appear in the requester. I dislike this feature, since it's inconsistent with the Amiga de facto file requester standard.

—Variables are displayed in the data windows in their order of declaration. There is no option to list them in sorted order. This becomes a major pain in the neck when there are lots of variables, and you have to scroll up and down the variable list in order to find a particular one. It could be argued that the order of displayed variables is a matter of preference, but it would have been nice to at least have an option to choose the order of display.

— There are no conditional breakpoints or watchpoints. A watchpoint is a breakpoint on a variable, which gets invoked when the variable is modified. This can be useful for tracking bugs that mysteriously zap some memory. I understand that this feature cannot be implemented efficiently on the Amiga (for lack of hardware memory protection), but I'd rather have an inefficient implementation than have nothing at all. A conditional breakpoint is one that gets invoked if a certain condition exists. The SLD has a "counted" breakpoint, which will be activated after it has been encountered a set number of times, but it is no substitute for a true conditional breakpoint.

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—There is no graceful way to exit early and clean up. If the program being debugged allocates resources (memory, screens, etc.), those resources will not be freed up if the program is terminated prematurely. Granted, the debugger should not have to keep track of resources allocated by the user, but there should be some mechanism for releasing it (e.g. a facility to call some termination procedures. Leon actually has something like that, but it's not widely available. You can always ask him for it).

—The destination gadget doesn't apply to all types of windows, but it's present in all of them. This just adds confusion.

— Some things aren't obvious; for example, how do you display variables declared in a definition module? (the answer: select the corresponding .RFM file in the Module List window, and then click on the destination gadget of a data window). The command to change variables and registers (function key F9) does not appear on any menu. The only way to find out about it is by reading the manual.

SUMMARY

Despite the minor problems, the Benchmark Source Level Debugger is an excellent product. Overall performance is good and the user interface is quite slick. It is obvious that a great deal of time went into developing it. If you are serious about programming in Benchmark Modula-2, then I suggest you purchase the debugger; it is worth the investment.

•AC•

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You Too Can Have A Dynamic Memory!

Flexible String Gadget Requester Using Dynamic Memory Allocation

by Randy Finch

I have been working on a C program that requires several requesters containing only string gadgets and two boolean gadgets (OK and CANCEL). The problem I encountered was that each requester needed a different number of string gadgets. Not wanting to write a different function for each requester, I decided to write one function capable of generating every requester I needed. To accomplish this task, I used dynamic memory allocation.

DYNAMIC MEMORY ALLOCATION ON THE AMIGA

After studying the various methods of allocating memory on the Amiga, I decided that using the AllocRemember function provided by the Intuition library would be the simplest method. This function creates a linked list of memory blocks using a Remember structure (defined in intuition.h). A Remember structure has the following form:

```
struct Remember {

     struct Remember *NextRemember;
     ULONG  RememberSize;
     UBYTE *Memory;
}
```

This structure contains a pointer to another Remember structure — an unsigned long integer containing the size of the memory block, and a pointer to the memory block allocated. The NextRemember pointer makes the linked list of memory blocks possible.

In order to create a linked list, a pointer to a Remember structure must be declared and initialized to NULL as follows:

```
struct Remember *MyMemBlocks = NULL;
```

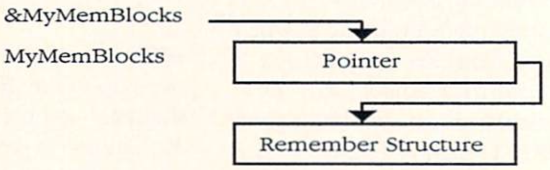
Suppose that two blocks of memory, one 100 bytes long and the other 200 bytes long, are needed by the program. The AllocRemember function is called as follows:

```
mem_pointer1 = AllocRemember(&MyMemBlocks,100,MEMF_CLEAR);
```

The first argument is the address of the Remember structure pointer. It is important to remember that this is not a pointer to a Remember structure, but a pointer to that structure pointer. This is illustrated in Figure 1. The second argument is the amount of memory to allocate (in this case 100 bytes). The third argument contains flags (defined in memory.h). MEMF_CLEAR fills the memory block with zeroes after allocation. Other flags include:

```
MEMF_FAST    Allocate fast (external) memory
MEMF_CHIP    Allocate chip (internal 512K) memory
MEMF_PUBLIC  Allocate memory for different tasks or interrupt
        code such as task control blocks, messages, etc.
```

FIGURE 1
Address of a Pointer to a Remember Structure



If none of the above flags is set, then MEMF_FAST is assumed first. If no fast memory is available, chip memory is used.

If the AllocRemember function is successful, it returns a pointer to the allocated block of memory. If it fails, it returns NULL. AllocRemember actually performs two memory allocations: one for the Remember structure and another for the memory block requested. It also fills in the Remember structure and sets the variable MyMemBlocks to point to the structure. This is represented graphically in Figures 2a and 2b.

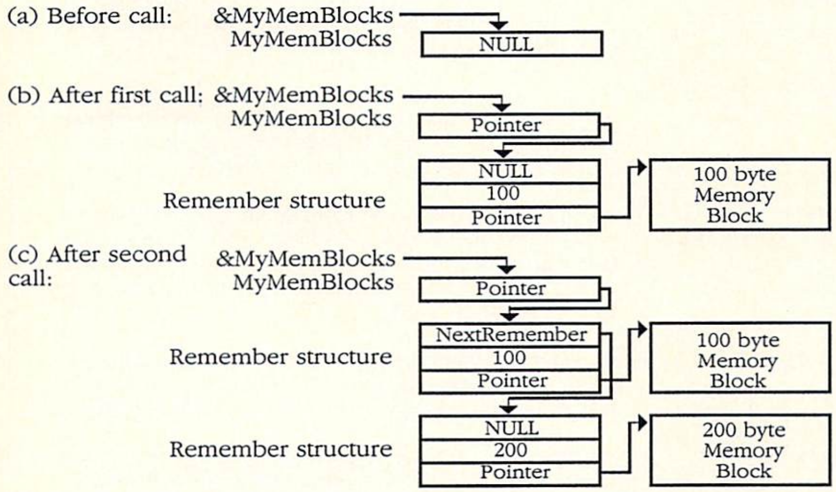
In order to allocate the 200-byte block of memory, the AllocRemember function is called again in a similar fashion as before:

```
mem_pointer2 = AllocRemember(&MyMemBlocks,200,MEMF_CLEAR);
```

Here the function creates another Remember structure and sets the NextRemember element of the previous Remember structure to point to this new structure. It then allocates a 200-byte block of memory (see Figure 2c).

Because of the manner in which the AllocRemember function is called, it is very easy to allocate multiple blocks of memory of equal size. For instance, to create ten blocks of memory which will each contain an IntuiText structure, the method shown in Listing One can be used.

Figure 2
Graphical Representation of Pointers Before and After Calls to AllocRemember Function



After this code is executed, IntuiTextBlocks will point to the first of ten Remember structures that are linked together through the NextRemember pointers. Each memory block can be accessed through the Memory element of its corresponding Remember structure. These pointers can be cast to type "pointer to an IntuiText structure" and then the memory blocks can be filled in with data as shown in Listing Two.

When the memory blocks are no longer needed, the Free-Remember function can be called.

FreeRemember(&IntuiTextBlocks, TRUE);

This function will deallocate all the memory blocks in the list, as well as the memory used by the Remember structures. If the second argument is FALSE, all the Remember structures will be erased, but the memory blocks will remain intact.

The method just described was used to allocate memory dynamically for various structures and buffers in a function which can create a requester that contains a variable number of string gadgets. This function is entitled StringsRequest and is part of the program entitled StrReq.c shown in Listing Three.

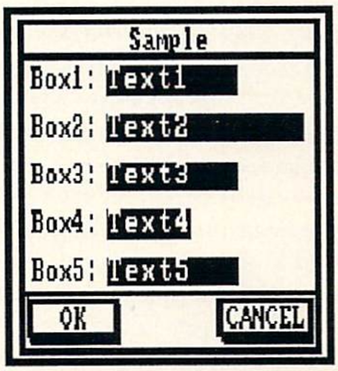
THE STRINGSREQUEST FUNCTION

Six separate linked lists of memory blocks are used in the StringsRequest function. Four of these linked lists contain NumEntrys Remember structures, where NumEntrys is the number of string gadgets required in the requester. These Remember structures point to memory blocks containing all the Gadget structures and their associated IntuiText and StringInfo structures, as well as to buffer memory for the gadget strings. The fifth and sixth linked lists actually contain only one Remember structure each. One points to a memory block containing a Requester structure, while the other points to an undo buffer.

The IntuiText structures supply information about text related to each gadget. This text will appear to the left of each string gadget and can be used to identify the type of information the user should supply in the gadget. The StringInfo structures supply information about the strings that actually appear in the gadgets. One piece of information in this structure is a pointer to a buffer where the actual text is stored. There is a separate buffer for each gadget. The structure also contains a pointer to an undo buffer. This buffer is filled in with a copy of a string gadget buffer when the gadget is first selected. After changes are made to the string in the gadget, the user can revert back to the original contents of the gadget by pressing [Right Amiga]-Q. One undo buffer is sufficient for all the gadgets because only one gadget can be active at a time. The Requester structure ties all of the above information together.

Figure 3

Sample Requester with Five String Gadgets Produced with the StringsRequest Function


Sample
Box1: Text1
Box2: Text2
Box3: Text3
Box4: Text4
Box5: Text5

HOW TO USE THE STRINGSREQUEST FUNCTION

The StringsRequest function is of type BOOL. If the requester is opened and closed successfully, it will return TRUE. Otherwise it will return FALSE. The eight parameters passed to the function are described in Table I.

TABLE ONE

Description of the Eight Parameters to be Passed to the StringsRequest Function

Name	Parameter Contents
HeaderText	Pointer to a null-terminated string containing text to be centered at the top of the requester.
NumEntrys	The number of string gadgets to appear in the requester.
BoxWidth	An array of short integers containing the width, in characters, of the boxes to contain the strings in the gadgets. This array must have at least NumEntrys elements.
Titles	An array of pointers to null-terminated strings containing the text to appear to the left of each string gadget. This text will help identify the type of information each string gadget contains. This array must have at least NumEntrys elements.
DefText	An array of pointers to null-terminated strings containing the initial text to appear inside each string gadget. Make sure the buffers containing the strings are long enough to contain their respective maximum string lengths. This array must have at least NumEntrys elements.
MaxLenDefText	An array of short integers containing the maximum length of the strings in each string gadget. This length includes the null-terminator. This array must have at least NumEntrys elements.
TypeDefText	An array of short integers containing either a zero or LONGINT (defined in intuition.h). A zero indicates that the corresponding gadget is a standard string gadget. LONGINT indicates the gadget should only accept long integers. This array must have at least NumEntrys elements.
Window	Pointer to the Window structure of the window in which the requester will appear.

Intuition will not allow a string gadget to be wider than the maximum length of the string it contains. Therefore, if an element of the MaxLenDefText array is smaller than the corresponding element in the BoxWidth array, the gadget width will be equal to MaxLenDefText, rather than BoxWidth. The StringsRequest function takes this into account when determining the size of the requester.

If an element of the TypeDefText array is equal to LONGINT, Intuition will only allow long integers to be entered into the string gadget. This is useful if the information needed is a number. The initial value in the corresponding DefText array element must still be a string; therefore, it is necessary to convert the long integer to an ASCII string before calling StringsRequest. Once the function returns control to the calling routine, the ASCII string must be converted back to an integer.

The StringsRequest function uses the information supplied by its parameters to determine the necessary width and height of the requester, so it can contain the string gadgets and associated text. It first allocates the necessary amount of memory, fills in this memory with all the necessary data structures, and then displays the requester. Figure 3 shows a sample requester containing five string gadgets. Because the gadgets are displayed in column format, the requester is limited to 10 string gadgets in the requester on a full screen window in non-interlaced mode or 20 gadgets in interlaced mode.

The requester also contains two boolean gadgets, one displaying OK and the other displaying CANCEL. After changes are made to the text in the string gadgets, the OK gadget can be selected to assign the new entries to the strings pointed to by the DefText array. If CANCEL is selected, the text that was originally in the gadgets when the requester was displayed remains intact. After choosing OK or CANCEL, the requester will disappear, the memory allocated to the various data structures will be returned to the free memory pool, and control will be returned to the calling program.

The short program entitled TestSR shown in Listing Four can be compiled and linked to StrReq.c. It demonstrates how the StringsRequest function works. The program prompts the user for information about the string gadgets to be displayed in the requester. Alternately, a text file containing all of this information can be created and the program can be executed with the input redirected to this file. TestSR will read the information, open a window, and display the requester. After changes are made and either the OK or CANCEL gadget is chosen, the window will close, and the current text from each gadget will be displayed.

LISTING 1

```
C Code Fragment Illustrating How to Allocate
Ten Memory Blocks to be Used for IntuiText Structures


    UBYTE *pointer;
    ULONG i;
    struct Remember *IntuiTextBlocks = NULL;
    ...
    ...
    for( i = 0 ; i < 10 ; ++i)  {
         pointer = AllocRemember(&IntuiTextBlocks,
                        sizeof(struct  IntuiText),  MEMF_CLEAR);
           /* Exit if allocation fails */

         if (pointer == NULL) ExitRoutine();
    }
    ...
    ...
```

LISTING 2

C Code Fragment Illustrating How to Fill in
Ten Memory Blocks With IntuiText Information

```
  UBYTE  i;
  STRPTR Titles[10];
  struct Remember  *ITextPointer;
  struct Remember  *IntuiTextBlocks;
  struct IntuiText *CurITextPointer;
  ...
  ...

  /*  Assign temporary pointer to Remember structures   */

  ITextPointer = IntuiTextBlocks;

  for (i = 0; i < 10; ++i) {

     /*  Cast a memory block pointer to IntuiText structure
           pointer  */

     CurITextPointer = (struct IntuiText *) ITextPointer-
>Memory;

     CurITextPointer->FrontPen  = 0;
     CurITextPointer->BackPen   = 1;
     CurITextPointer->DrawMode  = JAM2;
     CurITextPointer->LeftEdge  = 80;
     CurITextPointer->TopEdge   = 0;
     CurITextPointer->ITextFont = NULL;
     CurITextPointer->IText     = Titles[i];
     CurITextPointer->NextText  = NULL;

     /*  Get next memory block in the linked list   */

     ITextPointer = ITextPointer->NextRemember;

  }

  ...
  ...
```

LISTING 3

StrReq.c Program Including StringsRequest Function

```
/
*******************************************************************
*
*
*    StrReq.c - (C) Copyright 1988, by Randy Finch
*
*
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*
*
*
*     The function StringsRequest will create a requester
with a user         *
*    specified number of string gadgets.
*
```

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```
*
*
*******************************************************************/


/*--------   INCLUDE FILES   ----------*/

#include <exec/types.h>
#include <clib/macros.h>
#include <exec/memory.h>
#include <intuition/intuition.h>


/*---------   DEFINES   ----------*/

#define OKGADGET        1
#define CANCELGADGET    2
#define LEFTMARGIN      10
#define RIGHTMARGIN     10
#define SPACER          5
#define CHARWIDTH       8
#define TOPMARGIN       15
#define BOTTOMMARGIN    15
#define PIXPERENTRY     15
#define MINSRWIDTH      130


/*--------   GLOBAL VARIABLES   --------*/

struct Remember  *RememIntuiText = NULL;
struct Remember  *RememStringInfo = NULL;
struct Remember  *RememGadget = NULL;
struct Remember  *RememRequester = NULL;
struct Remember  *RememStringBuffer = NULL;
```

(continued on page 82)

(From The Managing Editor, continued from page 4)

camp helping the local farmers. While at the camp, the requirement was raised to one year. After her obligatory year at the camp, at the age of 19, she entered a pharmaceutical college. Two and a half years later, she graduated from the college and was immediately sent to a military hospital to assist the war-wounded. After a short time at the hospital, she was transferred once more. This time Lilo was stationed in an airplane parts factory. She spent the remainder of the war producing airplane parts in a prime target for Allied bombers.

Later, her husband Klaus returned from his internment in a concentration camp. He was one of six survivors out of 35 men who were in his high school class. And although Klaus had survived, his return to the couple's hometown of Gera placed him within East German borders. In 1953, Lilo and Klaus escaped to the West and, in 1954, they arrived in the United States.

> **"The Amiga is the computer for all ages."**
>
> Lilo Blumenfeld
> Amiga user, age 68

Lilo and Klaus have retired in Southern California. Lilo spends her retirement learning and playing with the Amiga. For the holidays, she gave her grandchildren a used Amiga 500 purchased with the money she made selling her Commodore 64 equipment. Lilo has become an active Amiga user through her desktop publishing and video work. She enjoys her Amiga and has a large group of fellow Amiga users as friends. With her Amiga, she has been able to remain in touch with her friends and home country.

Lilo Blumenfeld demonstrates why desktop publishing is such an important tool for all of us. It is not always necessary to produce magazines or newsletters for the masses; sometimes it is good to be able to keep in touch with the people that have grown to mean so much to you.

Networking is a fantastic thing, whether it be on the Amiga or with your friends. The ability to share knowledge, exchange ideas, and stay in touch with people with whom you have a common interest makes us all a little richer. We become larger in ourselves when we remain a part of a bigger whole.

As I said above, *Amazing Computing* is celebrating its fourth anniversary and we are proud of the people we have come to know in the Amiga community and of the excitement the Amiga is currently generating in video, animation, and presentation. AC is a result of the great efforts presented by a good many people. I thank you all.

Sincerely,

Don Hicks
Managing Editor

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(continued from page 79)

```
struct Remember  *RememUndoBuffer = NULL;

/*———————  ExitSR Function  ————————*/

void ExitSR()
{
  if (RememIntuiText) FreeRemember(&RememIntuiText,TRUE);
  if (RememStringInfo) FreeRemember(&RememStringInfo,TRUE);
  if (RememGadget) FreeRemember(&RememGadget,TRUE);
  if (RememStringBuffer) FreeRemember(&RememStringBuffer,TRUE);
  if (RememUndoBuffer) FreeRemember(&RememUndoBuffer,TRUE);
  if (RememRequester) FreeRemember(&RememRequester,TRUE);
} /* ExitSR */


/*———————  MaxInArray Function  ———————*/

WORD MaxInArray(num, array)
  UBYTE  num;
  WORD   array[];
{
  UBYTE i;
  WORD  max;

  max = MAX(array[0], array[1]);

  for (i = 2; i < num; ++i)
     max = MAX(array[i], max);

  return(max);
} /* MaxInarray */


/*————————  MaxStrLenInArray  ————————*/

WORD MaxStrLenInArray(num, strings)
  UBYTE  num;
  STRPTR strings[];
{
  UBYTE i;
  WORD  max;

 max = MAX(strlen(strings[0]),strlen(strings[1]));

  for (i = 2; i < num; ++i)
    max = MAX(strlen(strings[i]),max);

  return(max);
} /* MaxStrLenInArray */


/*———————  StringsRequest FUNCTION  ——————————*/

BOOL StringsRequest(HeaderText, NumEntrys, BoxWidth, Titles,
DefText, MaxLenDefText,
TypeDefText, window)
  STRPTR HeaderText;
  UBYTE  NumEntrys;
  WORD   BoxWidth[];
  STRPTR Titles[];
  STRPTR DefText[];
  WORD   MaxLenDefText[];
  WORD   TypeDefText[];
  struct Window *window;
{

  /*  Local variables  */

  WORD   WidestBox;
  WORD   WidestTitle;
  WORD   WidestText;
  WORD   WidestEntry;
  WORD   SRWidth;
  WORD   SRHeight;
  UBYTE  i;
  STRPTR CurStrBufPointer;
  STRPTR UndoBufPointer;
  ULONG  class;
  ULONG  choice;

  struct    Remember *StrBufPointer;
 struct   Remember *ITextPointer;
 struct   Remember *SInfoPointer;
 struct   Remember *GPointer;
 struct   Requester *ReqPointer;
 struct   IntuiText *CurITextPointer;
 struct   StringInfo *CurSInfoPointer;
 struct   Gadget *CurGPointer;
 struct   Gadget *LastGPointer;
 struct   IntuiMessage *message;
 struct   Gadget *gadget;

 /*  Text Attribute  */

 static struct TextAttr plain8 = {
    (STRPTR) "topaz.font", 8, FS_NORMAL, FPF_ROMFONT
 };

 /*  Header Text  */

 static struct IntuiText HeaderIText = {
    2, 1, JAM2,
    4, 3,
    &plain8,
    NULL,
    NULL
 };

 /*  OK Gadget  */

 static SHORT OKPoints[] = {
    -3,10,
    -3,-2,
    51,-2,
    51,10,
    -3,10,
    -2,11,
    52,11,
    52,-1
 };

 static struct Border OKBorder = {
    0,0,
    0,1,JAM1,
    8,
    &OKPoints[0],
    NULL
 };

 static struct IntuiText OKText = {
    0,1,JAM2,
    0,0,
    &plain8,
    "  OK  ",
    NULL
 };

 static struct Gadget OKGadget = {
    NULL,
    10,-14,
    48,8,
    GADGHCOMP | GRELBOTTOM,
    GADGIMMEDIATE | ENDGADGET,
    BOOLGADGET | REQGADGET,
    (APTR) &OKBorder,
    NULL,
    &OKText,
    0,
    NULL,
    OKGADGET,
    NULL
 };

 /*  Cancel Gadget  */

 static struct IntuiText CancelTxt = {
    0,1,JAM2,
        0,0,
        &plain8,
        "CANCEL",
       NULL
    };

    static struct Gadget CancelGadg = {
        &OKGadget,
        -58,-14,
        48,8,
        GADGHCOMP | GRELBOTTOM | GRELRIGHT,
        GADGIMMEDIATE | ENDGADGET,
        BOOLGADGET | REQGADGET,
        (APTR) &OKBorder,
        NULL,
        &CancelTxt,
        0,
        NULL,
        CANCELGADGET,
        NULL
    };

    static WORD SRPoints[] = {
        2, 1,
        128, 1,
        128, 29,
        2, 29,
        2, 1,
        2, 12,
        128, 12,
        128, 17,
        2, 17
    };

    static struct Border SRBorder = {
        0, 0,
        0, 1, JAM1,
        9,
        &SRPoints[0],
        NULL
    };


    /*——— Body of Function ———*/

    /* Initialize some variables */

    HeaderIText.IText = HeaderText;

    WidestText = MaxInArray(NumEntrys, MaxLenDefText);
    WidestBox  = MaxInArray(NumEntrys, BoxWidth);
    WidestEntry = MIN(WidestText, WidestBox);
    WidestTitle = MaxStrLenInArray(NumEntrys, Titles);

    SRWidth = LEFTMARGIN + RIGHTMARGIN + SPACER + (WidestEntry +
WidestTitle) *
CHARWIDTH;
    SRWidth = MAX(SRWidth, MINSRWIDTH);
    SRHeight = TOPMARGIN + BOTTOMMARGIN + NumEntrys *
PIXPERENTRY;

    /* Set up Border structure points to match size of requester
*/

    SRPoints[2] = SRPoints[4] = SRPoints[12] = SRPoints[14] =
SRWidth - 3;
    SRPoints[5] = SRPoints[7] = SRHeight - 2;
    SRPoints[15] = SRPoints[17] = SRHeight - 20;

    /* Allocate memory for all IntuiText, StringInfo, Gadget,
Requester,
        StrBuf, and UndoBuf structures
*/

    for (i = 0; i < NumEntrys; ++i) {

        if ( ! AllocRemember(&RememIntuiText, sizeof(struct
IntuiText), MEMF_CLEAR) ||
             ! AllocRemember(&RememStringInfo, sizeof(struct
StringInfo), MEMF_CLEAR) ||
             ! AllocRemember(&RememGadget, sizeof(struct
Gadget), MEMF_CLEAR) ||
            ! AllocRemember(&RememStringBuffer, WidestText + 1,
MEMF_CLEAR) )

            {
            ExitSR();
            return(FALSE);
            }
    }


    if ( ! AllocRemember(&RememRequester, sizeof(struct
Requester), MEMF_CLEAR) ||
        ! AllocRemember(&RememUndoBuffer, WidestText + 1,
MEMF_CLEAR) )
        {
        ExitSR();
        return(FALSE);
        }

    ReqPointer = (struct Requester *) RememRequester->Memory;
    UndoBufPointer = (STRPTR) RememUndoBuffer->Memory;

    /* Initialize IntuiText structures */

    ITextPointer = RememIntuiText;

    for (i = 0; i < NumEntrys; ++i) {
        CurITextPointer = (struct IntuiText *) ITextPointer-
>Memory;

        CurITextPointer->FrontPen  = 0;
        CurITextPointer->BackPen   = 1;
        CurITextPointer->DrawMode  = JAM2;
```

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```
     CurITextPointer->LeftEdge  = -strlen(Titles[i]) *
CHARWIDTH - SPACER;
     CurITextPointer->TopEdge   = 0;
     CurITextPointer->ITextFont = &plain8;
     CurITextPointer->IText     = Titles[i];
     CurITextPointer->NextText  = NULL;

     ITextPointer = ITextPointer->NextRemember;

  }


  /*  Initialize StringInfo structures  */

  SInfoPointer = RememStringInfo;
  StrBufPointer = RememStringBuffer;

  for (i = 0; i < NumEntrys; ++i) {
     CurSInfoPointer = (struct StringInfo *) SInfoPointer-
>Memory;
     CurStrBufPointer = (STRPTR) StrBufPointer->Memory;

     CurSInfoPointer->Buffer     = CurStrBufPointer;
     CurSInfoPointer->UndoBuffer = UndoBufPointer;
     CurSInfoPointer->BufferPos  = 0;
     CurSInfoPointer->MaxChars   = MaxLenDefText[i];
     CurSInfoPointer->DispPos    = 0;

     /*  Other items maintained by Intuition  */

     strcpy(CurStrBufPointer, DefText[i]);

     SInfoPointer = SInfoPointer->NextRemember;
     StrBufPointer = StrBufPointer->NextRemember;

  }

  /*  Initialize Gadgets  */

  LastGPointer = NULL;
  GPointer = RememGadget;
  ITextPointer = RememIntuiText;
  SInfoPointer = RememStringInfo;

  for (i = 0; i < NumEntrys; ++i) {
     CurGPointer = (struct Gadget *) GPointer->Memory;
     CurITextPointer = (struct IntuiText *) ITextPointer-
>Memory;
     CurSInfoPointer = (struct StringInfo *) SInfoPointer-
>Memory;

     CurGPointer->NextGadget      = LastGPointer;
     CurGPointer->LeftEdge        = -RIGHTMARGIN - WidestEntry *
CHARWIDTH;
     CurGPointer->TopEdge         = TOPMARGIN + i * PIXPERENTRY;
     CurGPointer->Width           = BoxWidth[i] * CHARWIDTH;
     CurGPointer->Height          = 8;
     CurGPointer->Flags           = GADGHCOMP | GRELRIGHT;
     CurGPointer->Activation      = TypeDefText[i];
     CurGPointer->GadgetType      = STRGADGET | REQGADGET;
     CurGPointer->GadgetRender    = NULL;
     CurGPointer->SelectRender    = NULL;
     CurGPointer->GadgetText      = CurITextPointer;
     CurGPointer->MutualExclude   = 0;
     CurGPointer->SpecialInfo     = (APTR) CurSInfoPointer;
     CurGPointer->GadgetID        = NULL;
     CurGPointer->UserData        = NULL;

     LastGPointer = CurGPointer;
     GPointer = GPointer->NextRemember;
     ITextPointer = ITextPointer->NextRemember;
     SInfoPointer = SInfoPointer->NextRemember;

  }


  /*  Set OKGadget NextGadget Pointer  */

  OKGadget.NextGadget = LastGPointer;


  /*  Center Header Text  */

  HeaderIText.LeftEdge = (SRWidth-
IntuiTextLength(&HeaderIText))/2;


  /*  Initialize Requester  */

   InitRequester(ReqPointer);

  ReqPointer->LeftEdge   = 10;
  ReqPointer->TopEdge    = 12;
  ReqPointer->Width       = SRWidth;
  ReqPointer->Height      = SRHeight;
   ReqPointer->ReqGadget  = &CancelGadg;
  ReqPointer->ReqText     = &HeaderIText;
  ReqPointer->BackFill   = 1;
  ReqPointer->Flags      = 0;
   ReqPointer->ReqBorder  = &SRBorder;

  if ( ! Request(ReqPointer, window)) {
     ExitSR();
     return(FALSE);
  }

   RefreshGadgets(&CancelGadg,  window,  ReqPointer);


  /*  Wait for Intuimessage  */

  class = GADGETDOWN;
  choice = CANCELGADGET;

  while (class != REQCLEAR)
    {
     if ((message = (struct IntuiMessage *) GetMsg(window-
>UserPort)) == 0L)
       {
        Wait(1L << window->UserPort->mp_SigBit);
       continue;
       }
    class  = message->Class;
     gadget = (struct Gadget *) message->IAddress;
     ReplyMsg(message);
    if (class == GADGETDOWN)
       choice = gadget->GadgetID;
    }


  /*  Handle OK and CANCEL  */

  if (choice == OKGADGET) {
      SInfoPointer = RememStringInfo;

      for (i = 0; i < NumEntrys; ++i) {
          CurSInfoPointer = (struct StringInfo *)
SInfoPointer->Memory;
           strcpy(DefText[i], CurSInfoPointer->Buffer);
           SInfoPointer = SInfoPointer->NextRemember;
      }

  }

  ExitSR();
   return(TRUE);
}  /* StringsRequester */
```

LISTING 4

TestSR.c Program for Testing the StringsRequest Function

```
/*****************************************************
 *                                                   *
 *  TestSR.c - (C) Copyright 1988, by Randy Finch    *
 *                                                   *
 *  Program to test StringsRequest function          *
 *
 *  This program was compiled with Lattice C v4.01          *
 *  and linked with StrReq.o using BLINK                     *
 *                                                           *
 *  Run from CLI                                             *
 *                                                           *
 **********************************************************/

#include   <exec/types.h>
#include   <intuition/intuition.h>

extern  BOOL  StringsRequest();
struct  IntuitionBase  *IntuitionBase;

struct NewWindow newwin = {
     0,0,640,200,              /* LeftEdge, TopEdge, Width,
Height */
     0,1,                         /* DetailPen, BlockPen */
      MENUPICK | CLOSEWINDOW |     /* IDCMPFlags */
      GADGETUP | GADGETDOWN | REQCLEAR,
      WINDOWSIZING | WINDOWDRAG |
      WINDOWCLOSE |
      ACTIVATE | SMART_REFRESH,    /* Flags */
     NULL,                         /* FirstGadget */
     NULL,                         /* CheckMark */
     “Test Window”,                /* Title */
     NULL,                         /* Screen */
     NULL,                         /* BitMap */
     20,20,                        /* MinWidth, MinHeight */
     640,200,                      /* MaxWidth, MaxHeight */
     WBENCHSCREEN   };             /* Type */

UBYTE   HText[80];          /* Header Text */
UBYTE   NumEnt;           /* Number of string gadgets */
WORD    BoxWid[10];       /* Array of gadget widths */
UBYTE   titles[10][80];   /* Array of gadget titles (10 strings,
                               80 characters max) */
UBYTE   deftext[10][80];  /* Array of default text for gadgets
*/
WORD    maxlen[10];       /* Array of maximum default text
string
                               lengths (80 max) */
WORD    typedt[10];       /* Array of gadget types
                               (0 - regular, 1 - long integer)
*/
LONG    temp;             /* Temporary variable */
STRPTR Titles[10];        /* Array of pointers to title strings
*/
STRPTR Deftext[10];       /* Array of pointers to default
                               text strings */

void main()
{
struct Window *win;
UBYTE i;
BOOL rt;

/*  Get information about requester  */

printf(“Header: ”);
scanf(“%s”,HText);
printf(“Number of Entries: ”);
scanf(“%d”,&temp);  NumEnt = (UBYTE)temp;
for(i=0; i<NumEnt; ++i) {
  printf(“Box width: ”);
  scanf(“%d”,&temp);  BoxWid[i] = (WORD)temp;
  printf(“Title: ”); scanf(“%s”,&titles[i][0]);
  printf(“Def text: ”); scanf(“%s”,&deftext[i][0]);
  printf(“Max len: ”);
  scanf(“%d”,&temp);  maxlen[i] = (WORD)temp;
  printf(“Type: ”);
  scanf(“%d”,&temp);  typedt[i] = (WORD)(temp*LONGINT);
}

/*  Assign pointer arrays  */

for(i=0; i<NumEnt; ++i) {
  Titles[i] = &titles[i][0];
  Deftext[i] = &deftext[i][0];
}

/*   Open window   */

IntuitionBase = (struct IntuitionBase *)
OpenLibrary(“intuition.library”,0);
win = (struct Window *) OpenWindow(&newwin);

/*   Call StringsRequest   */

rt = StringsRequest(HText, NumEnt, BoxWid, Titles, Deftext,
                 maxlen, typedt, win);

/*   Close window   */

CloseWindow(win);
CloseLibrary(IntuitionBase);

/*   Print current gadget text   */

for(i=0; i<NumEnt; ++i)
   printf(“Deftext[%d]: %s\n”, i, Deftext[i]);

}
```

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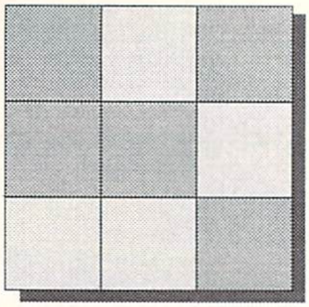
An AMIGA Conundrum



by David Senger

The AmigaBASIC program, CONUNDRUM, is a puzzle-like game. The puzzle consists of nine squares, arranged in a three-by-three matrix, like a Tic-Tac-Toe board. Each square is randomly colored, either red or green. You solve the puzzle by switching the colors of the squares, so that the eight outer squares are all green, and the square in the center of the board is red. To switch a square from red to green (or vice-versa), simply move the mouse pointer onto the square, and click the left mouse button. Easy? You bet!

Oops! There's just one small complication. Each time you click on a square, not only does that square switch colors, so do some of its neighbors. The squares in the actual game are not numbered, but I will use the numbered diagram, to explain how it works. If you click on a corner square, that square, plus the three closest squares, switch color. For instance, if you click on the square numbered 3 in the diagram, squares 2, 3, 5 and 6 will each switch color. Click on the middle square on any edge to switch all three squares on that edge. For example, if you click on square 6, you will switch squares 3, 6 and 9. Click on the center square (square 5) to switch the five squares that form a cross (squares 2, 4, 5, 6 and 8). Simply continue clicking on squares, as fast as you can decide which square to click on next, until the square numbered 5 in the diagram is red, and the other eight are all green.

1	2	3
4	5	6
7	8	9

At this point, a requester appears, and a computer voice congratulates you. The program pauses until you click the left mouse button, as the requester asks, and it then proceeds to set up the next game. The pause gives you a chance to read the elapsed time for your game, and the number of moves that you made. This information is continually updated on a scoreboard displayed just left of the gameboard. Below the scoreboard are two buttons, labelled NEXT GAME and QUIT, which do just what they say when they are clicked on.

You will find CONUNDRUM easy or difficult, depending on your ability to visualize special relationships. If you find it difficult, take heart. It gets easier with practice. Also, it is possible to cheat! Some of the random patterns that the computer generates are much easier to solve than others. In fact, you will occasionally get a game that allows you to win in just one move, provided that you spot your opportunity.

If you don't like the board layout that the computer has provided, you can "cheat" by clicking on the NEXT GAME button, which will immediately produce a new pattern of colored squares. If you do not like that one, simply continue clicking on the button until you get a pattern you like. When you have had enough, click on the QUIT button, and the program will clean up after itself and go away.

To use this program, type in the listing, save it to a disk containing a copy of AmigaBASIC, and double-click on the program icon. Make sure you have Preferences set to eighty columns before you run the program or it won't work properly.

Two or three points about the source code are worth a look. The program begins by presenting you with a screenful of instructions. When you finish reading and click the mouse to continue, the program blanks the screen to a light blue, simply by setting all four of the PALETTEs it uses to the same color. This conceals the activity on the screen for the two or three seconds it takes the Amiga to draw and GET the graphic arrays, draw the game display, and initialize the first game. At this point, the PALETTEs are reset to the colors used during play, and the game flashes onto the screen. This is done by the subroutine 'ReColor', and it is here that you must look for the PALETTE values used during play, and not in the PALETTE statements that appear near the start of the listing.

If you check the section in which the program draws and GETs the graphic arrays, you will notice that the array 'Square' is drawn using PALETTE 1, which is set to black by 'ReColor'. This may be a little confusing, since 'Square' is used to PUT a random arrangement of red squares on the gameboard at the start of each game. The reason that the black array produces a red square is that 'Square' is not PUT on the background color held in PALETTE 0 (in this case, blue), but on the green gameboard, whose color value is held in PALETTE 2. The XOR PUT function (the default PUT function) doesn't recognize the actual colors held by the PALETTEs, but only the PALETTE numbers. When an array whose color value is held in PALETTE 1 (in this case, black) is XOR PUT on an area of the screen whose color value is held in PALETTE 2 (in this case, green), it produces the color whose value is held in PALETTE 3 (in this case, red). Similarly, the graphic array, 'Quit', is drawn with PALETTE 2 (green), and 'NextGame' is drawn with PALETTE 3 (red). But when they are repeatedly XOR PUT on their PALETTE 1 (black) background by the subprogram 'Flash', 'Quit' displays a red button, and 'NextGame' displays a green one.

I've used the default XOR PUT function because, in spite of this minor complication, it is so extremely handy. When 'Square' is PUT on the green gameboard, it produces a red square. When 'Square' is PUT on the red square, the green gameboard reappears. This simplifies and speeds up the subroutines (One, Two, Three, etc.) used to draw squares on the gameboard and keep track of their colors, and also simplifies the subprogram, 'Flash'.

A couple of simple routines that you might find useful in your own programs are the subprogram 'Flash', and the subroutine, 'GameClock'. 'Flash' can be used to repeatedly draw and erase an image on the screen. It uses two SHARED variables, 'FlashNum' and 'FlashDelay'. The first controls the number of times the image flashes on the screen. Increasing the value of the second makes the routine flash slower. 'GameClock' can be used as a general-purpose timer. It is powered by the AmigaBASIC 'ON TIMER(n) GOSUB label' command.

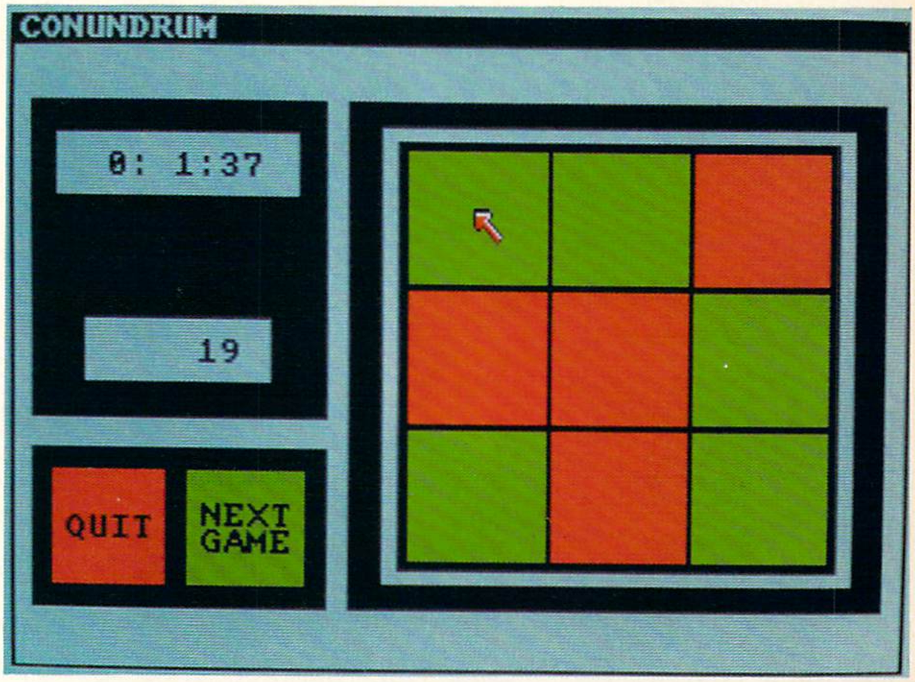
'SwitchColors' quickly calculates which of the squares the mouse has been clicked on, if the mouse pointer is anywhere on the gameboard. This one-line routine, which replaced about two-thirds of a page of code, shows how fast and convenient integer division can be. The congratulatory spoken messages are held in the array Talk$', which is defined at the start of the listing. If you would prefer to hear other comments, they are easily changed.

If you like, you can even change the rules of the game. Take a look at the beginning of the 'subroutines and subprogram' section. The first nine subroutines, labelled 'One', 'Two', etc., define which squares will switch colors in response to a click on any square. They are very straightforward, and easy to understand.

For instance, in subroutine 'One', the instruction 'PUT(SX1,SY1),Square', XOR PUTs the graphic array 'Square' on the gameboard at the position labelled '1' in the diagram, reversing its color from green to red, or from red to green, as the case may be. The accompanying instruction, 'C(1)=1-C(1)', switches the color flag variable from zero to one, or from one to zero, which keeps track of the color of square 1 (zero stands for green, and one stands for red). This allows the routine, 'WinCheck', to determine whether or not the latest move has won the game, by checking the values of all nine of the color flags.

With a little tinkering, you can modify these subroutines so that any combination of squares you choose will switch colors in response to a click on a particular square. You can also change the rules by modifying the 'WinCheck' routine. As written, 'WinCheck' recognizes a win when it finds that square 5, the square in the center of the gameboard, is red, and the other eight squares are all green. But you can have 'WinCheck' recognize a win for any combination of red and green squares you choose. Just set the color flag to one for each of the red squares in your winning pattern, and set the flag to zero for each of the green squares. If you make this adjustment, you must also set the color flags in the corresponding code near the end of the routine 'InitGameBoard' to the same values.

If you revise either the nine subroutines mentioned above, or the 'WinCheck' routine, you might also want to update the instructions that appear when you start the game, by rewriting the PRINT statements. Experiment with either, or both, of these modifications. You can make the game as easy, or as difficult, as you like. Thanks to the great speed with which the Amiga draws graphic images, and thanks to the natural agility of the mouse, I find the game very quick and responsive. It has the quality of transparency, which means that you soon lose awareness of the computer and focus completely on the game. I hope you enjoy it.



Bend your brain: Amiga Conundrum game screen.

I first saw a version of this game in an article and program written for the Commodore 64 in the March, 1987 issue of *Commodore Magazine.* A tip of the hat to Sally and Richard Daley. For the AmigaBASIC program that follows, I must take all the blame myself.

CONUNDRUM LISTING

```
'
'     ********************************************
'    * S E T   P R E F E R E N C E S   T O   A N *
'    * E I G H T Y   C O L U M N   D I S P L A Y *
'     ********************************************
'
'* * * * * * * * * * * * * * * * * * * * * * * * * * * *
'*                                                       *
'*          ###################################          *
'*          ##  C  O  N  U  N  D  R  U  M  ##            *
'*          ###################################          *
'*                                                       *
'*                 AMIGABASIC SOURCE                  *
'*                        BY                          *
'*                    DAVE SENGER                     *
'*                    APRIL 17/89                     *
'*                                                    *
'*                     GAME IDEA                      *
'*                        BY                          *
'*               SALLY & RICHARD DALEY                *
'*                COMMODORE MAGAZINE                  *
'*              MARCH, 1987, PAGE 116              *
'*                                                 *
'* * * * * * * * * * * * * * * * * * * * * * * * * *
'
'  SET PREFERENCES TO EIGHTY COLUMNS
'
RANDOMIZE TIMER : DEFINT  a-Z

MMode(0)=110:MMode(1)=0
MMode(2)=150:MMode(3)=0
MMode(4)=22200:MMode(5)=64
MMode(6)=10:MMode(7)=1
MMode(8)=0

FOR i=0 TO 8: FMode(i) = MMode(i): NEXT i
FMode(0) = 175: FMode (2) = 175
FMode(3) = 1: FMode(4) = 23650
SAY TRANSLATE$ (“”), MMode

Talk$(0) = TRANSLATE$ (“Congratulations.  You did it.”)
Talk$(1) = TRANSLATE$ (“You win again.”)
Talk$(2)  =  “YUW WAH4N AHNAH7DHER WAH3N.”
Talk$(3)  =  “AHNAH9DHER WIH4N.”
Talk$(4)  =  “GUH4DD-GEY9M.”

Info = 1:FirstWin = 1
X1=19:Y1=14:X2=59:Y2=48
X3=19:Y3=10:X4=59:Y4=44
X5=4:Y5=121:X6=145:Y6=25
X7=192:Y7=64
SX1=138:SX4=138:SX7=138
SX2=188:SX5=188:SX8=188
SX3=238:SX6=238:SX9=238
SY1=31:SY2=31:SY3=31
SY4=73:SY5=73:SY6=73
SY7=115:SY8=115:SY9=115
ScoreBoxX=4:ScoreBoxY=16
HrsLin=5:HrsCol=4
TriesLin=12:TriesCol=5
FlashNum=4:FlashDelay=100

'  The graphic arrays, NextGame, Quit, Square, Pause,
'  & Proceed, are integer arrays, having 2 bytes per
'  element.  See AmigaBASIC manual, p. 8-57.

DIM C(9) '                          Squares’ color flags
DIM   NextGame((6+(Y2-Y1+1)*2*INT((X2-X1+16)/16)*2)/2)
DIM   Quit((6+(Y4-Y3+1)*2*INT((X4-X3+16)/16)*2)/2)
DIM   Square((6+(Y7-Y6+1)*2*INT((X7-X6+16)/16)*2)/2)
DIM   Pause((6+(Y5+48-Y5+1)*2*INT((X5+105-X5+16)/16)*2)/2)
DIM   Proceed((6+(Y5+48-Y5+1)*2*INT((X5+105-X5+16)/16)*2)/2)

SCREEN  1,320,200,2,1
WINDOW  2,“CONUNDRUM”,,16,1

PALETTE 0,0,0,0   'Black
PALETTE 1,.47,.87,1   'Blue
PALETTE 2,.33,.87,0   'Green
PALETTE 3,.93,.2,0   'Red

PRINT
PRINT “  THE GAMEBOARD IS 9 SQUARES, ARRANGED”
PRINT “3 BY 3, LIKE A TIC-TAC-TOE BOARD.  EACH”
PRINT “SQUARE IS EITHER ”;
COLOR 3,0
PRINT “RED ”;
COLOR 1,0
PRINT “OR ”;
COLOR 2,0
PRINT “GREEN.”
COLOR 1,0
PRINT
PRINT “   TO SOLVE THIS ”;CHR$(34);“CONUNDRUM”;CHR$(34);”,
ALL YOU”
PRINT “MUST DO IS CHANGE THE COLOR OF ALL OF”
PRINT “THE SQUARES ON THE BOARD ”;
COLOR 2,0
PRINT “TO GREEN, ”;
COLOR 1,0
PRINT “EX-”
PRINT “CEPT FOR ”;
COLOR 3,0
PRINT “ONE RED SQUARE ”;
COLOR 1,0
PRINT “IN THE CENTER.”
PRINT
PRINT “  YOU SWITCH COLORS BY CLICKING THE”
PRINT “LEFT MOUSE BUTTON ON ANY SQUARE.  CLICK”
PRINT “ON A CORNER SQUARE TO SWITCH THAT”
PRINT “SQUARE, PLUS THE THREE CLOSEST SQUARES.”
PRINT “CLICK ON THE MIDDLE SQUARE ON ANY EDGE”
PRINT “TO SWITCH ALL THREE SQUARES ON THAT”
PRINT “EDGE.  CLICK ON THE CENTER SQUARE TO”
PRINT “SWITCH THE FIVE SQUARES THAT FORM A”
PRINT “CROSS.”
PRINT
PRINT
COLOR 2,0
PRINT “  CLICK LEFT MOUSE BUTTON TO CONTINUE.”
COLOR 1,0

WHILE MOUSE(0) <> 0: WEND
WHILE MOUSE(0) = 0: WEND

FOR i=0 TO 3              'Blue    Blank screen while game
 PALETTE i,.47,.87,1     'Blue    is set up, and gameboard
NEXT i                    'Blue    is drawn

CLS

' Draw & “GET” graphic arrays

LINE  (0,0)-(100,100),3,BF
COLOR 0,3
LOCATE 4,4 : PRINT “NEXT”
LOCATE 5,4 : PRINT “GAME”
GET  (X1,Y1)-(X2,Y2),NextGame

LINE  (0,0)-(100,100),2,BF
COLOR 0,2
LOCATE 4,4 : PRINT “QUIT”
GET  (X3,Y3)-(X4,Y4),Quit

LINE  (X6,Y6)-(X7,Y7),1,BF
GET  (X6,Y6)-(X7,Y7),Square

LINE  (X5-2,Y5+2)-(X5+103,Y5+50),1,BF
COLOR 3,1
LOCATE 17,4: PRINT “YOU WIN!”
COLOR 2,1
LOCATE 19,3: PRINT “CLICK LEFT”
LOCATE 20,2: PRINT “MOUSE BUTTON”
LOCATE 21,2: PRINT “FOR NEW GAME”
GET  (X5-2,Y5+2)-(X5+103,Y5+50),Pause

LINE  (X5,Y5)-(X5+105,Y5+48),1,BF
PUT  (X5+8,Y5+7),Quit
PUT  (X5+57,Y5+7),NextGame
GET  (X5,Y5)-(X5+105,Y5+48),Proceed

COLOR 1,0: CLS

'  Draw game display

PUT  (X5,Y5),Proceed

LINE  (ScoreBoxX,ScoreBoxY)-
(ScoreBoxX+105,ScoreBoxY+95),1,BF
LINE  (ScoreBoxX+10,ScoreBoxY+10)-
(ScoreBoxX+95,ScoreBoxY+28),0,BF
LINE  (ScoreBoxX+20,ScoreBoxY+66)-
(ScoreBoxX+85,ScoreBoxY+84),0,BF

LINE  (117,16)-(306,169),1,BF
LINE  (129,24)-(294,161),0,BF
LINE  (134,28)-(289,157),1,BF

NewGame:

Tries&=0:Hrs=0:Min=0:Sec=0
LOCATE  HrsLin,HrsCol
PRINT  USING  “##_:##_:##”;Hrs;Min;Sec
LOCATE  TriesLin,TriesCol-1
PRINT  USING  “#######”;Tries&

InitGameBoard:

'  Draw green gameboard with black dividers

LINE  (138,31)-(285,154),2,BF
LINE  (186,31)-(187,154),1,BF
LINE  (236,31)-(237,154),1,BF
LINE  (138,71)-(285,72),1,BF
LINE (138,113)-(285,114),1,BF

'  “PUT” random arrangement of red
'  squares on green gameboard

FOR y=0 TO 2
  FOR x=1 TO 3
   C(x+y*3) = INT(2*RND)
     IF C(x+y*3)=1 THEN PUT (x*50+88,y*42+31),Square
  NEXT x
NEXT y

IF (C(5)=1 AND C(1)=0 AND C(2)=0 AND C(3)=0 AND C(4)=0 AND
C(6)=0 AND C(7)=0 AND C(8)=0 AND C(9)=0) GOTO InitGameBoard
IF Info = 1 THEN GOSUB ReColor
ON TIMER(1) GOSUB GameClock
TIMER ON

Move:

WHILE MOUSE(0) <> 0:  WEND
WHILE MOUSE(0) = 0:  WEND

x = MOUSE(1):  y = MOUSE(2)

IF (x>136 AND x<287 AND y>29 AND y<156) THEN
    Tries&=Tries&+1
    LOCATE TriesLin,TriesCol
   PRINT USING "#####,";Tries&
   GOTO SwitchColors
  ELSEIF (y<128 OR y>162) THEN
   GOTO Move
  ELSEIF (x>60 AND x<102) THEN
   Flash X5+57,Y5+7,NextGame()
   GOTO NewGame
  ELSEIF (x>11 AND x<53) THEN
   Flash X5+8,Y5+7,Quit()
   GOTO GetOut
  ELSE
   GOTO Move
END IF

SwitchColors:

ON ((x-87)\50+3*((y-30)\42)) GOSUB
One,Two,Three,Four,Five,Six,Seven,Eight,Nine

WinCheck:

IF (C(5)=1 AND C(1)=0 AND C(2)=0 AND C(3)=0 AND C(4)=0 AND
C(6)=0 AND C(7)=0 AND C(8)=0 AND C(9)=0) GOTO Winner

GOTO Move

Winner:

TIMER OFF
GOSUB Stroke
PUT  (X5,Y5),Pause,PSET

WHILE MOUSE(0) <> 0: WEND
WHILE MOUSE(0) = 0: WEND

PUT  (X5,Y5),Proceed,PSET
GOTO NewGame

GetOut:

ERASE
NextGame,Quit,Square,Pause,Proceed,FMode,MMode,Talk$,C
WINDOW CLOSE 2
SCREEN CLOSE 1
END

'  Subroutines & subprogram follow:

One:

C(1)=1-C(1):C(2)=1-C(2):C(4)=1-C(4):C(5)=1-C(5)
PUT(SX1,SY1),Square:PUT(SX2,SY2),Square
PUT(SX4,SY4),Square:PUT(SX5,SY5),Square
RETURN

Two:

C(1)=1-C(1):C(2)=1-C(2):C(3)=1-C(3)
PUT(SX1,SY1),Square:PUT(SX2,SY2),Square
PUT(SX3,SY3),Square
RETURN

Three:

C(2)=1-C(2):C(3)=1-C(3):C(5)=1-C(5):C(6)=1-C(6)
PUT(SX2,SY2),Square:PUT(SX3,SY3),Square
PUT(SX5,SY5),Square:PUT(SX6,SY6),Square
RETURN

Four:

C(1)=1-C(1):C(4)=1-C(4):C(7)=1-C(7)
PUT(SX1,SY1),Square:PUT(SX4,SY4),Square
PUT(SX7,SY7),Square
RETURN

Five:

C(2)=1-C(2):C(4)=1-C(4):C(5)=1-C(5):C(6)=1-C(6):C(8)=1-C(8)
PUT(SX2,SY2),Square:PUT(SX4,SY4),Square
PUT(SX5,SY5),Square:PUT(SX6,SY6),Square
PUT(SX8,SY8),Square
RETURN

Six:

C(3)=1-C(3):C(6)=1-C(6):C(9)=1-C(9)
PUT(SX3,SY3),Square:PUT(SX6,SY6),Square
PUT(SX9,SY9),Square
RETURN

Seven:

C(4)=1-C(4):C(5)=1-C(5):C(7)=1-C(7):C(8)=1-C(8)
PUT(SX4,SY4),Square:PUT(SX5,SY5),Square
PUT(SX7,SY7),Square:PUT(SX8,SY8),Square
RETURN

Eight:

C(7)=1-C(7):C(8)=1-C(8):C(9)=1-C(9)
PUT(SX7,SY7),Square:PUT(SX8,SY8),Square
PUT(SX9,SY9),Square
RETURN

Nine:

C(5)=1-C(5):C(6)=1-C(6):C(8)=1-C(8):C(9)=1-C(9)
PUT(SX5,SY5),Square:PUT(SX6,SY6),Square
PUT(SX8,SY8),Square:PUT(SX9,SY9),Square
RETURN

GameClock:

Sec=Sec+1
IF Sec>59 THEN
 Sec=0
 Min=Min+1
   IF Min>59 THEN
    Min=0
    Hrs=Hrs+1 : IF Hrs>99 THEN Hrs=0
   END IF
END IF
LOCATE HrsLin,HrsCol
PRINT USING "##_:##_:##";Hrs;Min;Sec
RETURN

ReColor:

Info = 0
PALETTE 0,.47,.87,1  'Blue        Restore colors to make
PALETTE 1,0,0,0  'Black           game visible after it
PALETTE 2,.33,.87,0  'Green      has been set up and
PALETTE 3,.93,.2,0  'Red          gameboard has been drawn.
RETURN

Stroke:

IF FirstWin = 0 THEN
   Sentence = INT(4*RND + 1)
  ELSE
   Sentence = 0: FirstWin = 0
END IF
ON INT(2*RND + 1) GOSUB Male,Female
RETURN

Male:

SAY Talk$(Sentence), MMode
RETURN

Female:

SAY Talk$(Sentence), FMode
RETURN

SUB Flash(x,y,a()) STATIC
SHARED FlashNum, FlashDelay
FOR i=1 TO 2*FlashNum
 PUT(x,y),a
   FOR j=1 TO FlashDelay:NEXT j
NEXT i
END SUB
```

•AC•

AC Disks

Source code and executable programs included for all articles printed in *Amazing Computing*.

#1 This disk contains the source and executable code relating to articles in AC V3.8 and AC V3.9.

Gels In MultiForth Parts I & II: Learn how to use Gels in MultiForth. Author: John Bushakra

FFP & IEEE: An Example of using FFP & IEEE math routines in Modula-2. Author: Steve Faiwiszewski

CAI: A complete Computer Aided Instruction program with editor written in AmigaBASIC. Author: Paul Castonguay

Tumblin' Tots: A complete game written in Assembly language. Save the falling babies in this game. Author: Davd Ashley

VGad: A gadget editor that allows you to easily create gadgets. The program then generates C code that you can use in your own programs. Author: Stephen Vermeulen

MenuEd: A menu editor that allows you to easily create menus. The program then generates C code that you can use in your own programs. Author David Pehrson

Bspread: A powerful spread sheet program written in AmigaBASIC. Author Brian Catley

#2 This disk contains the source and executable code relating to articles in AC V4.3 and AC V4.4.

Fractals Part I: An introduction to the basics of fractals with examples in AmigaBASIC, True BASIC, and C. Author: Paul Castonguay

Shared Libraries: C source and executable code that shows the use of shared libraries. Author: John Baez

MultiSort: Sorting and intertask communication in Modula-2. Author: Steve Faiwiszewski

Double Playfield: Shows how to use dual playfields in AmigaBASIC. Author: Robert D'Asto

'881 Math Part I: Programming the 68881 math coprocessor chip in C Author: Read Predmore

Args: Passing arguments to an AmigaBASIC program from the CLI. Author: Brian Zupke

#3 This disk contains the source and executable code relating to articles in AC V4.5 and AC V4.6.

Digitized Sound: Using the Audio.device to play digitized sounds in Modula-2. Author: Len A. White

'881 Math Part II: Part II of programming the 68881 math coprocessor chip using a fractal sample. Author: Read Predmore

At Your Request: Using the system-supplied requestors from AmigaBASIC. Author: John F. Weiderhirn

Insta Sound: Tapping the Amiga's sound from AmigaBASIC using the Wave command. Author: Greg Stringfellow

MIDI Out: A MIDI program that you can expand upon. Written in C. Author: Br. Seraphim Winslow

Diskless Compiler: Setting up a compiler environment that doesn't need floppies. Author: Chuck Raudonis

#4 This disk contains the source and executable code relating to articles in AC V4.7 and AC V4.8.

Fractals Part II: Part II on fractals and graphics on the Amiga in AmigaBASIC and True BASIC. Author: Paul Castonguay

Analog Joysticks: The code for using analog joysticks on the Amiga. Written in C. Author: David Kinzer

C Notes: A small program to search a file for a specific string in C. Author: Steven Kemp

Better String Gadgets: How to tap the power of string gadgets in C. Author: John Bushakra

On Your Alert: Using the system's alerts from AmigaBASIC. Author: John F. Wiederhirn

Batch Files: Executing batch files from AmigaBASIC. Author: Mark Aydellotte

C Notes: The beginning of a utility program in C. Author: Steven Kemp

#5 This disk contains the source and executable code relating to articles in AC V4.9.

Memory Squares: Test your memory with this AmigaBASIC game. Author: Mike Morrison

High Octane Colors: Use dithering in AmigaBASIC to get the appearance of many more colors. Author: Robert D'Asto

Cell Animation: Using cell animation in Modula-2. Author: Nicholas Cirasella

Improving Graphics: Improve the way your program looks no matter what screen it opens on. In C. Authro: Richard Martin

Gels in Multi-Forth-Part 3: The third and final part on using Gels in Forth. Author: John Bushakra

C Notes V4.9: Look at a simple utility program in C. Author: Steven Kemp

1D_Cells: A program that simulates a one-dimensional cellular automata. Author:Russell Wallace

Colourscope: A shareware program that shows different graphic designs. Author: Russell Wallace

ShowILBM: A program that displays lo-res, hi-res, interlace and HAM IFF pictures. Author: Russell Wallace

Labyrinth_II: Roll playing text adventure game. Author: Russell Wallace

Most: Text file reader that will display one or more files. The program will automatically format the text for you. Author: Russell Wallace

Terminator: A virus protection program. Author: Russell Wallace

#6 This disk contains the source and executable code relating to articles in AC V4.10 & AC V4.11.

Typing Tutor: A program written in AmigaBASIC that will help you improve your typing. Author: Mike Morrison

Glat's Gadgets: Using gadgets in Assembly language. Author: Geff Glatt

Function Evaluator: A program that accepts mathamatical functions and evaluates them. Written in C. Author: Randy Finch

Fractals: Part III: AmigaBASIC code that shows you how to save/load pictures to disk. Author: Paul Castonguay

More Requestors: Using system calls in AmigaBASIC to build requestors. Author: John Wiederhirn

Multi-Forth: Implementing the ARP library from Forth. Author: Lonnie A. Watson

Search Utility: A file search utility written in C. Author: Steven Kemp

Fast Pics: Re-writing the pixel drawing routine in Assembly language for speed. Author: Scott Steinman

64 Colors: Using extra-half-brite mode in AmigaBASIC. Author: Bryan Catley

Fast Fractals: A fast fractal program written in C with Assembly language subroutines. Author: Hugo M. H. Lyppens

Multitasking in Fortran: All the hard work is done here so you can multitask in Fortran. Author: Jim Locker

#7 This disk contains the source and executable code relating to articles in AC V4.12 & AC V5.1.

Arexx Part II: Information on how to set up your own ARexx programs with examples. Author: Steve Gilmor.

Leggo My LOGO: A Logo program that generates a Christmas tree with decorations. Author: Mike Morrison.

Trees and Recursion: An introduction to binary trees and how to use recursion. Written in C. Author: Forest Arnold.

C Notes: A look at two data compressing techniques in C. Author: Stephen Kemp.

Animation? BASICally: Using cell animation with AmigaBASIC. Author: Mike Morrison

Menu Builder: A utility to help build menus in your own programs. Written in C. Author: Tony Preston.

Dual Demo: How to use dual playfields to make your own arcade games. Written in C. Author: Thomas Eshelman.

Scanning the Screen: Part four in the fractals series. This article covers drawing to the screen. In AmigaBASIC and TrueBasic. Author: Paul Castonguay.

C Notes: Recursive functions in C. Author: Stephen Kemp.

#8 This disk contains the source and executable code relating to articles in AC V5.2.

Dynamic Memory!: Flexible string gadget requester using dynamic memory allocation. Author: Randy Finch.

Call Assembly language from BASIC: Add speed to your programs with Assembly. Author: Martin F. Combs.

Conundrum: An AmigaBASIC program that is a puzzle-like game, similar to the game Simon. Author: Dave Senger.

For PDS orders, please use form on page CIII
Visa and MasterCard is available on orders of $20.00 or more.

The AMICUS & Fred Fish
Public Domain Software Library

This software is collected from user groups and electronic bulletin boards around the nation. Each Amicus disk is nearly full, and is fully accessible from the Workbench. If source code is provided for any program, then the executable version is also present. This means that you don't need the C compiler to run these programs. An exception is granted for those programs only of use to people who own a C compiler.

The Fred Fish disk are collected by Mr. Fred Fish, a good and active friend of the Amiga.

Note: Each description line below may include something like 'S-O-E-D', which stands for 'source, object file, executable and documentation'. Any combination of these letters indicates what forms of the program are present. Basic programs are presented entirely in source code format.

AMICUS Disk 1

ABasic programs: Graphics

3DSolids	3d solids modeling prog. w/sample data files
Blocks	draws blocks
Cubes	draws cubes
Durer	draws pictures in the style of Durer
FScape	draws fractal landscapes
Hidden	3D drawing program, w/ hidden line removal
JPad	simple paint program
Optical	draw several optical illusions
PaintBox	simple paint program
Shuttle	draws the Shuttle in 3d wireframe
SpaceArt	graphics demo
Speaker	speech utility
Sphere	draws spheres
Spiral	draws color spirals
ThreeDee	3d function plots
Topography	artificial topography
Wheels	draws circle graphics
Xenos	draws fractal planet landscapes

ABasic programs: Tools

AddressBook	simple database program for addresses
CardFile	simple card file database program
Demo	multiwindow demo
KeyCodes	shows keycodes for a key you press
Menu	run many ABasic programs from a menu
MoreColors	way to get more colors on the screen at once, using aliasing
shapes	simple color shape designer SpeakIt speech and narrator demo

ABasic programs: Games

BrickOut	classic computer brick wall game
Othello	also known as 'go'
Saucer	simple shoot-em-up game
Spelling	simple talking spelling game
ToyBox	selectable graphics demo

ABasic programs: Sounds

Entertainer	plays that tune
HAL9000	pretends it's a real computer
Police	simple police siren sound
SugarPlum	plays "The Dance of the Sugarplum Fairies"

C programs:

ATerm	simple terminal program, S-E
cc	aid to compiling with Lattice C
decvnt	opposite of CONVERT for cross developers
Dotty	source code to the 'dotty window demo
echox	unix-style filename expansion, partial S,O-D
fasterfp	explains use of fast-floating point math
FixDate	fixes future dates on all files on a disk, S-E
freedraw	simple Workbench drawing prog.,S-E
GfxMem	graphic memory usage indicator, S-E
Grep	searches for a given string in a file with docs.
ham	shows off the hold-and-modify method of color generation
IBM2Amiga	fast parallel cable transfers between an IBM and an Amiga
Mandel	Mandelbrot set program, S-E
moire	patterned graphic demo, S-E
objfix	makes Lattice C object file symbols visible to Wack, S-E
quick	quick sort strings routine
raw	example sample window I/O
setlace	turns on interlace mode, S-E
sparks	qix-type graphic demo, S-E

Other executable programs:

SpeechToy	speech demonstration
WhichFont	displays all available fonts

Texts:

68020	describes 68020 speedup board from CSA
Aliases	explains uses of the ASSIGN command
Bugs	known bug list in Lattice C 3.02
CLICard	reference card for AmigaDOS CLI
CLICommands	guide to using the CLI
Commands	shorter guide to AmigaDOS CLI commands
EdCommands	guide to the ED editor
Filenames	AmigaDOS filename wildcard conventions
HalfBright	explains rare graphics chips that can do more colors
ModemPins	description of the serial port pinout
RAMdisks	tips on setting up your RAM: disk
ROMWack	tips on using ROMWack
Sounds	explanation of Instrument demo sound file format
Speed	refutation of Amiga's CPU and custom chip speed
WackCmds	tips on using Wack

AMICUS Disk 2

C programs:

alib	AmigaDOS object library manager , S-E
ar	text file archive program, S-E
fixobj	auto-chops executable files
shell	simple CLI shell, S-E
sq, usq	file compression programs, S-E
YachtC	a familiar game, S-E
Make	a simple 'make' programming utility, S-E
Emacs	an early version of the Amiga text editor, S-E-D

Assembler programs:

bsearch.asm	binary search code
qsort.asm	Unix compatible qsort() function, source and C test program
setjmp.asm	setjmp() code for Lattice 3.02
SVprintf	Unix system V compatible printf()
trees.o	Unix compatible tree() function, O-D

(This disk formerly had IFF specification files and examples. Since this spec is constantly updated, the IFF spec files have been moved to their own disk in the AMICUS collection.)

John Draper Amiga Tutorials:

Animate	describes animation algorithms
Gadgets	tutorial on gadgets
Menus	learn about Intuition menus

AMICUS Disk 3

C programs:

Xref	a C cross-reference gen., S-E
6bitcolor	extra-half-bright chip gfx demo, S-E
Chop	truncate (chop) files down to size, S-E
Cleanup	removes strange characters from text files
CR2LF	converts carriage returns to line feeds in Amiga files, S-E
Error	adds compile errors to a C file, S
Hello	window ex. from the RKM, S
Kermit	generic Kermit implementation, flakey, no terminal mode, S-E
Scales	sound demo plays scales, S-E
SkewB	Rubik cube demo in hi-res colors, S-E

AmigaBasicProgs(dir)

Automata	cellular automata simulation
CrazyEights	card game
Graph	function graphing programs
WitchingHour	a game

ABasiC programs:

Casino	games of poker, blackjack, dice, and craps
Gomoku	also known as 'othello'
Sabotage	sort of an adventure game

Executable programs:

Disassem	a 68000 disassembler, E-D
DpSlide	shows a given set of IFF pictures, E-D
Arrange	a text formatting program, E-D

Assembler programs:

Argoterm	terminal program with speech and Xmodem, S-E

AMICUS Disk 4 **Files from the original Amiga Technical BBS**

Note that some of these files are old, and refer to older versions of the operating system. These files came from the Sun system that served as Amiga technical support HQ for most of 1985. These files do not carry a warranty, and are for educational purposes only. Of course, that's not to say they don't work.

Complete and nearly up-to-date C source to 'image.ed', an early version of the Icon Editor. This is a little flaky, but compiles and runs.

An Intuition demo, in full C source, including files: demomenu.c, demomenu2.c, demoreq.c, getascii.c, idemo.c, idemo.guide, idemo.make, idemoall.h, nodos.c, and txwrite.c

addmem.c	add external memory to the system
bobtest.c	example of BOB use
consoleIO.c	console IO example
creaport.c	create and delete ports
creastdi.c	create standard I/O requests
creatask.c	creating task examples
diskio.c	example of track read and write
dotty.c	source to the 'dotty window' demo
dualplay.c	dual playfield example
flood.c	flood fill example
freemap.c	old version of 'freemap'
geltools.c	tools for VSprites and BOBs
gfxmem.c	graphic memory usage indicator
hello.c	window example from RKM
inputdev.c	adding an input handler to the input stream
joystik.c	reading the joystick
keybd.c	direct keyboard reading
layertes.c	layers examples
mousport.c	test mouse port
ownlib.c,	
ownlib.asm	example of making your own library with Lattice
paratest.c	tests parallel port commands
seritest.c	tests serial port commands
serisamp.c	example of serial port use
prinintr.c	sample printer interface code
prtbase.h	printer device definitions
regintes.c	region test program
setlace.c	source to interlace on/off program
setparallel.c	set the attributes of the parallel port
SetSerial.c	set the attributes (parity, data bits) of the serial port
singplay.c	single playfield example
speechtoy.c	source to narrator and phonetics demo
timedely.c	simple timer demo
timer.c	exec support timer functions
timrstuf.c	more exec support timer functions
WhichFont.c	loads and displays all available system fonts

process.i and prtbase.i assmebler include files:

autorqstr.txt	warnings of deadlocks with autorequesters
consoleIO.txt	copy of the RKM console I/O chapter
diskfont.txt	warning of disk font loading bug
fullfunc.txt	list of #defines, macros, functions
inputdev.txt	preliminary copy of the input device chapter
License	information on Workbench distribution license
printer	pre-release copy of the chapter on printer drivers, from RKM 1.1
v11fd.txt	'diff' of .fd file changes from version 1.0 to 1.1
v28v1.diff	'diff' of include file changes from version 28 to 1.0

AMICUS Disk 5 **Files from the Amiga Link / Amiga Information Network**

Note that some of these files are old, and refer to older versions of the operating system. These files are from Amiga Link. For a time, Commodore supported Amiga Link, aka AIN, for online developer technical support. It was only up and running for several weeks. These files do not carry a warranty, and are for educational purposes only. Of course, that's not to say they don't work.

A demo of Intuition menus called 'menudemo', in C source

whereis.c	find a file searching all subdirectories
bobtest.c	BOB programming example
sweep.c	sound synthesis example

Assembler files:

mydev.asm	sample device driver
mylib.asm	sample library example
mylib.i	
mydev.i	
asmsupp.i	
macros.i	assembler include files

Texts:

amigatricks	tips on CLI commands
extdisk	external disk specification
gameport	game port spec
parallel	parallel port spec
serial	serial port spec
v1.1update	list of new features in version 1.1
v1.1h.txt	'diff' of include file changes from version 1.0 to 1.1

Files for building your own printer drivers, including dospecial.c, epsondata.c, init.asm, printer.c, printer.link, printertag.asm, render.c, and wait.asm. This disk does contain a number of files describing the IFF specification. These are not the latest and greatest files, but remain here for historical purposes. They include text files and C source examples. The latest IFF spec is elsewhere in this library.

AMICUS Disk 6 **IFF Pictures**

This disk includes the DPSlide program, which can view a given series of IFF pictures, and the 'showpic' program, which can view each file at the click of an icon. The pictures include a screen from ArticFox, a Degas dancer, the guys at Electronic Arts, a gorilla, horses, King Tut, a lighthouse, a screen from Marble Madness, the Bugs Bunny Martian, a still from an old movie, the Dire Straits moving company, a screen from Pinball Contruction Set, a TV newcaster, the PaintCan, a world map, a Porsche, a shuttle mission patch, a tyrannosaurus rex, a planet view, a VISA card, and a ten-speed.

AMICUS Disk 7 **DigiView HAM demo picture disk**

This disk has pictures from the DigiView hold-and-modify video digitizer. It includes the ladies with pencils and lollypops, the young girl, the bulldozer, the horse and buggy, the Byte cover, the dictionary page, the robot and Robert. This includes a program to view each picture separately, and all together as separate, slidable screens. The 'seeilbm' program, to turn any screen into an IFF picture.

AMICUS Disk 8

C programs:

Browse	view text files on a disk, using menus S-E-D
Crunch	removes comments and white space from C files, S-E
IconExec	EXECUTE a series of commands from Workbench S-E
PDScreen Dump	dumps Rastport of highest screen to printer
SetAlternate	sets a second image for an icon, when clicked once S-E
SetWindow	makes windows for a CLI program to run under Workbench S-E
SmallClock	a small digital clockin a window menu bar
Scrimper	the screen printer in the fourth AC S-E

Amiga Basic Programs:

(Note: Many of these programs are present on AMICUS Disk 1. Several of these were converted to Amiga Basic, & included here.)

AddressBook	a simple address book database
Ball	draws a ball
Cload	program to convert Compuserve hex files to binary, S-D
Clue	the game, Intuition driven
ColorArt	art drawing program
DeluxeDraw	the drawing program in the 3rd AC, S-D
Eliza	conversational computer psychologist
Othello	the game, as known as 'go'
RatMaze	3D ratmaze game
ROR	boggling graphics demo
Shuttle	draws 3D pictures of the space shuttle
Spelling	simple spelling program
YoYo	wierd zero-gravity yo-yo demo, tracks yo-yo to the mouse

Executable programs:

3Dcube	Modula-2 demo of a rotating cube
AltIcon	sets a second icon image, displayed when the icon is clicked
AmigaSpell	a slow but simple spell checker, E-D
arc	the ARC file compression prog must for telecom, E-D
Bertrand	graphics demo
disksalvage	prog. to rescue trashed disks, E-D
KwikCopy	a quick but nasty disk copy program: ignores errors, E-D
LibDir	lists hunks in an object file E-D
SaveILBM	saves any screen as IFF pic.E-D ?? ScreenDump shareware screen dump prog, E only
StarTerm	version 2.0, term program, XmodemE-D

Texts:

LatticeMain	tips on fixing _main.c in Lattice
GDiskDrive	make your own 5 1/4 drive
GuruMed	explains the Guru numbers
Lat3.03bugs	bug list of Lattice C version 3.03
MForgeRev	user's view of the MicroForge HD
PrintSpooler	EXECUTE-based print spool prog.

.BMAP files:

These are the necessary links between Amiga Basic and the system libraries. To take advantage of the Amiga's capabilities in Basic, you need these files. BMAPs are included for 'clist', 'console', 'diskfont', 'exec', 'icon', 'intuition', 'layers', 'mathffp', mathieeedoubas', 'mathieeesingbas', 'mathtrans', 'potgo', 'timer' and 'translator'.

AMICUS Disk 9

Amiga Basic Programs:

FlightSim	simple flight simulator program
HuePalette	explains Hue, Saturation, & Intensity
Requester	ex. of requesters from Amiga Basic
ScrollDemo	demonstrates scrolling capabilities
Synthesizer	sound program
WorldMap	draws a map of the world

Executable programs:

Boing!	latest Boing! demo,with selectable speed,E
Brush2C	converts an IFF brush to C data instructions, initialization code, E
Brush2Icon	converts IFF brush to an icon, E
Dazzle	graphics demo, tracks to mouse, E
DeciGEL	assembler program for stopping 68010 errors, S-E-D
Klock	menu-bar clock and date display, E
life	the game of life, E
TimeSet	Intuition-based way to set the time & date
EMEmacs	another Emacs, more oriented to word processing, S-E-D
MyCLI	a CLI shell, works without the Workbench, S-E-D

Texts:

FnctnKeys	read function keys from Amiga Basic
HackerSln	explains how to win the game 'hacker'
Ist68010	guide to installing a 68010 in your Amiga
Boing!	latest Boing! demo,with selectablespeed, E
Brush2C	converts an IFF brush to C data instructions, initialization code, E
Brush2Icon	converts IFF brush to an icon, E
Dazzle	graphics demo, tracks to mouse, E
DeciGEL	assembler program for stopping 68010 errors, S-E-D
Klock	menu-bar clock and date display, E
life	the game of life, E
TimeSet	Intuition-based way to set the time date,
EMEmacs	another Emacs, more oriented to word processing, S-E-D
MyCLI	a CLI shell, works without the Workbench, S-E-D

Texts:

FnctnKeys	explains how to read function keys from Amiga Basic
HackerSln	explains how to win the game 'hacker'
Ist68010	guide to installing a 68010 in your Amiga
PrinterTip	sending escape sequences to your printer
StartupTip	tips on setting up your startup-sequence file
XfrmrReview	list of Transformer programs that work

Printer Drivers:

Printer drivers for the Canon PJ-1080A, the C Itoh Prowriter, an improved Epson driver that eliminates streaking, the Epson LQ-800, the Gemini Star-10, the NEC 8025A, the Okidata ML-92, the Panasonic KX-P10xx family, and the Smith-Corona D300, with a document describing the installation process.

AMICUS Disk 10 **Instrument sound demos**

This is an icon-driven demo, circulated to many dealers. It includes the sounds of an acoustic guitar, an alarm, a banjo, a bass guitar, a boink, a calliope, a car horn, claves, water drip, electric guitar, a flute, a harp arpegio, a kickdrum, a marimba, a organ minor chord, people talking, pigs, a pipe organ, a Rhodes piano, a saxophone, a sitar, a snare drum, a steel drum, bells, a vibrophone, a violin, a wailing guitar, a horse whinny, and a whistle.

AMICUS Disk 11

C programs

dirutil	Intuition-based, CLI replacement manager S-E
cpri	shows and adjusts priority of CLI processes, S-E
ps	shows info on CLI processes, S-E
vidtex	displays Compuserve RLE pics, S-E

AmigaBasic programs

pointered	pointer and sprite editor program
optimize	optimization ex ample from AC article
calendar	large, animated calendar, diary and date book program
amortize	loan amortizations
brushtoBOB	converts small IFF brushes to AmigaBasic BOB OBJECTS
grids	draw and play waveforms
hilbert	draws Hilbert curves
madlib	mad lib story generator
mailtalk	talking mailing list program
meadows3D	3D graphics program, from A C™ article
mousetrack	mouse tracking example in hires mode
slot	slot machine game
tictactoe	the game
switch	pachinko-like game
weird	makes strange sounds

Executable programs

cp	unix-like copy command, E
cls	screen clear, S-E
diff	unix-like stream editor uses 'diff' output to fix files
pm	chart recorder performances indicator

Assembler programs

cls	screen clear and CLI arguments example

Modula-2

trails	moving-worm graphics demo
caseconvert	converts Modula-2 keywords to uppercase
Forth	Breshehan circle algorithm example
Analyze	12 templates for the spreadsheet Analyze

There are four programs here that read Commodore 64 picture files. They can translate Koala Pad, Doodle, Print Shop and News Room graphics to IFF format. Getting the files from your C-64 to your Amiga is the hard part.

AMICUS Disk 12

Executable programs

blink	'alink' compatible linker, but faster, E-D
clean	spins the disk for disk cleaners, E-D
epsonset	sends Epson setttings to PAR from menu E-D
showbig	view hi-res pics in low-res superbitmap, E-D
speaktime	tell the time, E-D
undelete	undeletes a file, E-D
cnvapldhm	converts Apple][low, medium and high res pictures to IFF, E-D
menued	menu editor produces C code for menus, E-D
quick	quick disk-to-disk nibble copier, E-D
quickEA	copies Electronic Arts disks, removes protection, E-D
txed 1.3	demo of text editor from Microsmiths,E-D

C programs

spin3	rotating blocks graphics demo, S-E-D
popcli	start a new CLI at the press of a button, like Sidekick, S-E-D
vsprite	VSprite example code from Commodore, S-E-D
AmigaBBS	Amiga Basic bulletin board prog., S-D

Assembler programs

star10	makes star fields like Star Trek intro,S-E-D

Pictures

Mount Mandelbrot	3D view of Mandelbrot set
Star Destroyer	hi-res Star Wars starship
Robot	robot arm grabbing a cylinder

Texts

vendors	Amiga vendors, names, addresses
cardco	fixes to early Cardco memory boards
cinclude	cross-reference to C include files
mindwalker	clues to playing the game well
slideshow	make your own slideshows from the Kaleidoscope disk

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Where can you find all the Fred Fish Collection, as well as the Amicus Disks and The AC Disks, cross referenced and fully listed?

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AMICUS Disk 13

Amiga Basic programs

Routines from Carolyn Scheppner of CBM Tech Support, to read and display IFF pictures from Amiga Basic. With documentation. Also included is a program to do screen prints in Amiga Basic, and the newest BMAP files, with a corrected ConvertFD program. With example pictures, and the SaveILBM screen capture program.

Routines to load and play FutureSound and IFF sound files from Amiga Basic, by John Foust for Applied Visions. With documentation and C and assembler source for writing your own libraries, and interfacing C to assembler in libraries. With example sound.

Executable programs

gravity	Sci Amer Jan 86 gravitation graphic simulation, S-E-D

Texts

MIDI	make your own MIDI instrument interface, documentation & a hi-res schematic.

AMICUS Disk 14

Several programs from Amazing Computing issues:

Tools

Dan Kary's	C structure index program, S-E-D

Amiga Basic programs:

BMAP Reader	by Tim Jones
IFFBrush2BOB	by Mike Swinger
AutoRequester	example
DOSHelper	Windowed help system for CLI commands, S-E-D
PETrans	translates PET ASCII files to ASCII files, S-E-D
C Squared	Graphics program from Scientific American, Sept 86, S-E-D
crlf	adds or removes carriage returns from files, S-E-D
dpdecode	decrypts Deluxe Paint, remo
ves copy	protection, E-D
queryWB	asks Yes or No from the user returns exitt code, S-E
vc	VisiCalc type spreadsheet, no mouse control, E-D
view	views text files with window and
slider	gadget, E-D

Oing, Sproing, yaBoing, Zoing are sprite-based

Boing! style	demos, S-E-D

CLIClock, sClock, wClock are window border clocks, S-E-D

Texts

An article on long-persistance phospor monitors, tips on making brushes of odd shapes in Deluxe Paint, and recommendations on icon interfaces from Commodore-Amiga.

AMICUS Disk 15

The C programs include:

'pr'	a file printing utility, which can print files in the background, and with line numbers and control character filtering.
'fm'	displays a chart of the blocks allocated on a disk.
'Ask'	questions an 'execute' file, returns an error code to control the execution in that batch file
'Stat'	an enhanced version of AmigaDOS 'status' command.
'Dissolve'	random-dot dissolve demo displays IFF picture slowly, dot by dot, in a random fashion.
'PopCLI2'	invoke new CLI window at the press of a key.

The executable programs include:

'Form'	file formatting program through the printer driver to select print styles
'DiskCat'	catalogs disks, maintains, sorts,merges lists of disk files
'PSound'	SunRize Industries' sampled sound editor & recorder
'Iconmaker'	makes icons for most programs
'Fractals'	draws great fractal seascapes and mountain scapes.
'3D Breakout'	3D glasses, create breakout in a new dimension
'AmigaMonitor'	displays lists of open files,
memory use,	tasks, devices and ports in use.
'Cosmoroids'	version of 'asteroids' for the Amiga.
'Sizzlers'	high resolution graphics demo writteN in Modula 2.

Texts:

'ansi.txt'	explains escape sequences the CON: device responds to.
'FKey'	includes template for making paper to sit in the tray at the top of the Amiga keyboard.
'Spawn'	programmer's document from Commodore Amiga, describs ways to use the Amiga's multitasking capabilities in your own programs.

AmigaBasic programs:

'Grids'	draw sound waveforms, and hear them played.
'Light'	a version of the Tron light-cycle video game.
'MigaSol'	a game of solitaire.
'Stats'	program to calculate batting averages
'Money'	"try to grab all the bags of money that you can."

AMICUS 15 also includes two beautiful IFF pictures, of the enemy walkers from the ice planet in Star Wars, and a picture of a cheetah.

AMICUS Disk 16

'juggler' demo by Eric Graham. a robot juggler bouncing three mirrored balls, with sound effects. Twenty-four frames of HAM animation are flipped quickly to produce this image. You control the speed of the juggling. The author's documentation hints that this program might someday be available as a product.

IFF pictures

parodies of the covers of Amiga World and Amazing Computing.

C programs:

'Inputhandler'	example of making an input handler.
'FileZap3'	binary file editing program
'ShowPrint'	displays IFF picture, and prints it.
'Gen'	program indexes and retrieves C structures and variables declared in the Amiga include file system.

Executable Programs:

'FixHunk2'	repairs an executable program file for expanded memory
'ms2smus'	converts Music Studio files to IFF standard 'SMUS' format. I have heard this program might have a few bugs, especially in regards to very long songs, but it works in most cases.
'Missile'	Amiga version of the 'Missile Command' video game,

This disk also contains several files of scenarios for Amiga Flight Simulator II. By putting one of these seven files on a blank disk, and inserting it in the drive after performing a special command in this game, a number of interesting locations are preset into the Flight Simulator program. For example, one scenario places your plane on Alcatraz, while another puts you in Central Park

AMICUS Disk 17

Telcommunications disk whuch contains six terminal programs.

"Comm" V1.33	term prog. with Xmodem, WXmodem,
"ATerm" V7.2	term prog. includes Super Kermit
"VT-100"V2.6	Dave Wecker's VT-100 emulator with Xmodem,Kermit, and scripting
"Amiga Kermit"	V4D(060) port of the Unix C-Kermit
"VTek" V2.3.1	Tektronix graphics terminal emulator based on the VT-100 prog. V2.3 and contains latest 'arc' file compression
"AmigaHost"	V0.9 for Compuserve. Includes RLE graphics abilities & CIS-B file transfer protocol.
"FixHunk"	expansion memory necessity
"FixObj"	removes garbage characters from modem received files
"Txt"	filters text files from other systems to be read by the Amiga E.C.
"addmem"	executeable version for use with mem expansion article in AC v2..1
'arc'	file documentation and a basic tutorial on un 'arc'ing files
"arcre"	for makeing "arc" files E.C.

AMICUS Disk 18

Logo	Amiga version of the popular computer language, with example programs, E-D
Tv*Text	Demo version of the TV*Text character generator
PageSetter	Freely distributable versions of the updated PagePrint and PageIFF programs for the PageSetter desktop publishing package.
FullWindow	Resizes any CLI window using only CLI commands, E-D
Life3d	3-D version of Conway's LIFE program, E-D
Defdisk	CLI utility to re-assign a new Workbench disk, S-E-D
Calendar.WKS	Lotus-compatible worksheet that makes calendars
SetKey	Demo of keyboard key re-programmer, with IFF picture to make function key labels, E-D
VPG	Video pattern generator for aligning monitors, E-D
HP-10C	Hewlett-Packard-like calculator, E-D
SetPrefs	Change the Preferences settings on the fly, in C, S-E-D
StarProbe	Program studies stellar evolution. C source included for Amiga and MS-DOS, S-E-D
ROT	C version of Colin French's AmigaBasic ROT program from Amazing Computing. ROT edits and displays polygons to create three dimensional objects. Up to 24 frames of animation can be created and displayed. E-D
Scat	Like Ing, windows on screen run away from the mouse, E-D
DK	Decays" the CLI window into dust, in Modula 2, S-E-D
DropShadow2	Adds layered shadows to Workbench windows, E-D

AMICUS Disk 19

This disk carries several programs from Amazing Computing. The IFF pictures on this disk include the Amiga Waks part T-shirt logo, a sixteen-color hi-res image of Andy Griffith, and five Amiga Live! pictures from the Amazing Stories episode that featured the Amiga.

Solve	Linear equation solver in assembly language, S-E-D
Gadgets	Bryan Catley's AmigaBasic tutorial, S-D
Household	Bryan Catley's AmigaBasic household inventory program, S-D
Waveform	Jim Shields' Waveform Workshop: AmigaBasic, S-D
DiskLib	John Kennan's AmigaBasic disk librarian program, S-D
Subscripts	Ivan Smith's AmigaBasic subscript example, S-D
String, Boolean	C programs and executables for Harriet Maybeck Tolly's Intuition tutorials, S-E-D
Skinny C	Bob Riemersma's example for making small C programs, S-E-D
COMAL.h	Make C look like COMAL header file, S-D
EmacsKey	Makes Emacs function key definitions by Greg Douglas, S-D
AMon 1.1	Snoop on system resource use, E-D
BTE	Bard's Tale character editor, E-D
Size	CLI program shows the size of a given set of files, E-D
WinSize	CLI window utility resizes current window, S-E-D

AMICUS Disk 20

Compactor, Decoder	Steve Michel AmigaBasic tools, S-D
BobEd	BOB and sprite editor written in C,S-E-D
SpriteMasterII	Sprite editor and animator by Brad Kiefer, E-D
BlitLab	Blitter chip exploration C program by Tomas Rokicki, S-E-D
FPic	Image processing program by Bob Bush loads and saves IFF images, changes them with several techniques, E-D
Bankn	Complete home banking prog., balance your checkbook! E-D

AMICUS Disk 21

Target	Makes each mouse click sound like a gunshot, S-E-D
Sand	Simple game of sand that follows the mouse pointer, E-D
PropGadget	Harriet Maybeck Tolly's proportional gadget example, S-E
EHB	Checks to see if you have extra-half-bright graphics, S-E-D
Piano	Simple piano sound program
CelScripts	Makes cel animation scripts for Aegis Animator, in AmigaBasic

This disk has electronic catalogs for AMICUS disks 1 to 20 and Fish disks 1 to 80. They are viewed with the DiskCat program, included here.

AMICUS Disk 22

Cycles	Light cycle game, E-D
Show_PrintII	Views and prints IFF pictures, including larger than screen
PrtDrvGen2.3	Latest version of a printer driver generator
Animations	VideoScape animations of planes and boing ball
Garden	Makes fractal gardenscapes
BasicSorts	Examples of binary search and insertion sort in AmigaBasic

AMICUS Disk 23

An AMICUS disk completely dedicated to music on the Amiga. This disk contains two music players, songs, instruments, and players to bring the thrill of playing "Big Sound" on your Amiga

Instruments	a collection of 25 instruments for playing and creating music. The collection ranges from Cannon to Marimba
List INSTR	program to list the instruments DMCS will not load as well as list the origins for any instrument.
Music	a collection of 14 Classical pieces
1812Overture	The 16 minute classical feature complete with Cannon!

Three Amiga Music Players:
SMUSPlay
MusicCraft2SMUS
MusicStudio2SMUS

AMICUS Disk 24

Sectorama	A disk sector editor for any AmigaDOS file-structured device, recover files from a trashed hard disk. By David Joiner of MicroIllusions
Iconize	Reduces the size of IFF images, companion program, Recolor, remaps the palette colors of one picture to use the palette colors of another. Using these programs and a tool to convert IFF brushes to Workbench icons, make icons look like miniatures of the pictures.
CodeDemo	Modula-2 program converts assembler object files to inline CODE statements. Comes with a screen scrolling example
AmiBug	Workbench hack makes the same fly walk across the screen at random intervals. Otherwise, completely harmless.
BNTools	Three examples of assembly language code from Bryce Nesbitt: 1. SetLace,prog to switch interlace on&off. 2. Why, replace AmigaDOS CLI Why 3. LoadIt, prog to load a file into memory until a reboot. (Only the most esoteric hackers will find LoadIt useful.)
Monolace	CLI program resets Preferences to several colors of monochrome & interlace screens. C source is included, works with DisplayPref, a CLI program which displays the current Preferences settings.
BoingMachine	A ray-traced animation of a perpetual motion Boing-making machine, includes the latest version of the Movie program, which has the ability to play sounds along with the animation. By Ken Offer
Daisy	Example of using the translator and narrator devices to make the Amiga talk. It is written in C.
QuickFlix	Script-driven animation and slideshow program flips through IFF images.
BMon	System monitor AmigaBasic program ; perform simple manipulations of memory.
Moose	Random background program, a small window opens with a moose resembleing Bullwinklesaying witty phrases user definable.
DGCS	Deluxe Grocery Construction Set, simple Intuition-based prog for assembling and printing a grocery list.

The Virus Check directory holds several programs relating to the software virus that came to the US from pirates in Europe as detailed in Amazing Computing V2.12. Bill Koester's full explanation of the virus code is included. One program checks for the software virus on a Workbench disk; the second program checks for the virus in memory, which could infect other disks.

AMICUS Disk 25

Nemesis	Graphics demo pans through space towards the mythical dark twin of the sun with wonderful music and space graphics.

The KickPlay directory holds text that describes several patches to the Kickstart disk. For Amiga 1000 hackers who feel comfortable patching a disk in hexadecimal, KickPlay offers the chance to automatically do an ADDMEM for old expansion memory, as well as the ability to change the picture of the "Insert Workbench" hand. A program is also included for restoring the correct checksum of the Kickstart disk.

KeyBird	BASIC prog edits keymaps, adjust the Workbench keymaps or create your own.
8ColorWB	Modifies the Workbench so three bitplanes are used, icons can have eight colors, instead of four, eight-color icons are included. Public domain program "zapicon" or "brush2icon" converts eight-color IFF brushes to icons, to use Deluxe Paint to make icons for this new Workbench.
BrushIcon	Converts brushes to icons (bizarr docs).
Egraph	Graphing prog reads [x,y] values from a file and displays them on the screen, similar to the same-named Unix program.
Keep 1.1	Message-managing program for telecommunications, lets you save messages from an online transcript to another file, understands the message format of the national networks and several types of bulletin board software. Moves through the transcript and save messages
Kill.fastdir	Speed up directory access, it creates a small file in each directory on a disk which contains the infor-mation about the files, will also remove all the "fastdir" files from each directory. by CLImate's authors

The LaceWB program changes between interlace and non-interlace Workbench. Previously, you were forced to reboot after changing Preferences to an interlaced screen. This program flips between the normal and extended screen heights.

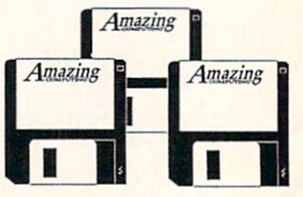
PW_Utility	A shareware utility for ProWrite users, changes margin settings and font types.
Guru	A CLI program, prints out probable causes for Guru mediations; C source included.
DiskWipe	Latest from Software Distillery, removes files from directories or disk drives, much faster than "delete."
Snow	AmigaBasic makes snowflake designs.
Mist	Mailing list database.
Softballstats	Maintain softball statistics/ team records.
Dodge	Short Modula-2 program moves the Workbench screen around after a period of time, prevents monitor burn-in.

AMICUS Disk 26

Todor Fay's SoundScape module code from his Amazing Computing articles. The source to Echo, Chord, TX, and VU is included. The Lattice and Manx C source code is here, along with the executable modules.

Claz2	Update of prog to convert IFF images to PostScript files for printing on laser printers
SDBackup	Hard disk backup prog with Lempel-Ziv compression to reduce the necessary number of disks.
TCB	Prints information about tasks and processes in the system; assembler source is included.
FunBut	Lets a function key act like a rapid series of left mouse button events.
DC	A handy program for people who use an Amiga 1020 5 1/4 inch drive as an AmigaDOS floppy. A Workbench program that sends a DiskChange signal to the operating system: instead of typing "diskchange df2:" over and over again, just click on the icon. C source included.
System config	File makes screen 80 columns wide of text in the Scribble! word processor.
Dick2Ram	2 programs to move the Scribble! spelling dictionary to and from the RAM disk.
Lexical	Analyzes a text file and gives the Gunning-Fog, Flesch, and Kincaid indices which measure readability.
HexDump	Modula-2 program to display memory locations in hexadecimal.
Tartan	AmigaBasic; design Tartan plaids.
DirMaster	Disk catalog program.
BMP	plays 8SVX sampled sounds in the background while something else is happening in the Amiga, as your Amiga is booting, for example.
ShowPt	CLI program changes your pointer to a given pointer.

AMICUS 26 also has a collection of mouse pointers, & Workbench program to display them



For PDS orders, please use form on page CIII
Visa and MasterCard is available on orders of $20.00 or more.

The Fred Fish Public Domain Software Library

The Fred Fish disks are collected by Mr. Fred Fish, a good and active friend of the Amiga.

Fred Fish Disk 243

FragIt	A dynamic memory thrasher for the Amiga. FragIt randomly allocates and deallocates psuedo-random size values of memory, ranging from 16 bytes to 50000 bytes by default. The result is an allocation nightmare, thousands of memory fragments are being created and destroyed continuously. This puts stress on the memory allocation routines of an application undergoing testing by simulating a very busy, highly fragmented memory environment. This is version 2.0, featuring many bug fixes, a full intuition interface, configuration settings via the icon, and more. Includes source. By: Justin V. McCormick
ImageLab	A program which performs image processing on IFF pictures. Includes standard image processing functions such as convolution, averaging, smoothing, enhancement, histograms, FFT's, etc. Also includes file conversion functions, a clipboard, and other useful functions. Version 2.2, binary only. Author: Gary Milliorn
LPE	LaTeX Picture Editor is a graphical editor for producing "pictures" for the LaTeX system, which may be imported by LaTeX. You can draw boxes, dashed boxes, lines, vectors, circles, boxes with centered text, and plain text. This is version 1.0, binary only. Author: Joerg Geissler
NoClick	A program which silences the clicking of empty drives on the B2000 under AmigaDOS 1.3. It should also work on an A500. This is version 3.5, a last minute update to FF241. Includes assembly source code. By: Norman Iscove
Password	A program which enhances your computer's security by making it complicated enough that users without your password will get discouraged trying to boot and use your system. This should keep out most casual or nontechnical users. Version 1.21p, binary only. Author: George Kerber
Pcopy	An intuition based disk copier similiar to the resident "DiskCopy". This is version 2.0, a highly upgraded rewrite of the version on disk 151. It features high speed diskcopy with write-verify and data recovery from damaged tracks. A lot of effort has gone into making this copier friendly in its usage, as well in its multitasking properties. Binary only. Author: Dirk Reisig
SimGen	This program will add a 2 or 4 color picture to your WorkBench screen. If the picture is digitized, it will look much like a genlock, hence the name SimGen (Simulated Genlock). Binary only. By: Gregg Tavares
SuperLines	A new lines demo with a realtime control panel that you can use to change various aspects of the action. Has 10 built in color palettes, support for things like color "smudge", color cycling, color "bounce", multiple resolutions, and can display either lines or boxes. This is version 1.0, binary only. Author: Chris Bailey
WarpUtil	Warp (version 1.11), UnWarp (version 1.0), and WarpSplit (version 1.1). Warp reads raw filesystems and archives them into a compressed version in a normal file. UnWarp turns them back into filesystems. WarpSplit splits them up into smaller pieces on a track by track basis. Binary only. Author: SDS Software

Fred Fish Disk 244Fred Fish Disk 244

BBChampion	This is BootBlockChampionIII, a very nicely done program that allows you to load, save, and analyze any bootblock. This is version 3.1, binary only. Author: Roger Fischlin
BootIntro	This program creates a small intro on the bootblock of any disk, which will appear after you insert the disk for booting. The headline can be up to 44 characters. The scrolling text portion can be up to 300 characters. This is version 1.2, an update to version 1.0 on disk 188. Binary only. Author: Roger Fischlin
FMC	An alternative to the NoFastMem program. Uses a cute little switch gadget to turn fast memory on or off. Version 1.2, includes source in assembly code. Author: Roger Fischlin
SizeChecker	Size checker uses a list of possible sizes of a file to check for unexpected changes in the size of those files. For example, it can be used to spot a link virus or to point out changes in the configuration of your system. With the appropriate comments added to your size list, you can check to see what version of the files you are using (1.2, 1.3, 1.4, ARP, etc). Version 1.0, binary only. Author: Roger Fischlin
TextDisplay	A text display program, like "more" or "less", but about half the size and handles all screen formats (pal/ntsc, interlace/non-interlace, etc). This is version 1.52, an update to version 1.1 on disk 188. Binary only. Author: Roger Fischlin
XColor	A program designed to change the colors of any screen. You can also add and subtract bitplanes in the screen, or convert the screen to black and white (grayscale). Handles HAM and EHB screens. Version 1.2, includes source in assembly code. Author: Roger Fischlin

Fred Fish Disk 245

ATOF	A small utility that allows you to use the fonts of another disk without using the CLI. Version 1.0, binary only. Author: Roger Fischlin
BootIntro	This program creates a small intro on the bootblock of any disk, which will appear after you insert the disk for booting. This is the "next generation" BootIntro, a more colorful version than the one on disk 244, but the text must be shorter. The first line can be up to 24 characters. The second and third lines can be up to 22 characters. The scrolling text can be up to 98 characters. This is "next generation version 1.1". Binary only. Author: Roger Fischlin
Fenster	A program which can operate on windows owned by another program, to close them, change their size, refresh gadgets, move the window to the background, etc. Version 1.0, includes source. Author: Roger Fischlin
PathMaster	A file requester with lots of features. Can be easily configured by the programmer to suit a variety of applications. Includes source. Author: Justin McCormick
Reversi	Plays the classical reversi game on an 8 x 8 square field. Version 1.2, includes source in assembly code. Author: Marc Fischlin
Vlt	This is a binary update to the vlt program on disk 226, and fixes a problem with external protocol support. You still need the rest of the files from disk 226. Version 4.065, binary only. Author: Willy Langeveld

Fred Fish Disk 246

Dmake	Release version 1.0 of Matt's version of the UNIX make utility. Update to beta version released on disk 179. Features multiple dependancies, wildcard support, and more. Binary only. Author: Matt Dillion
LabelPrint	A program that allows you to easily print labels for your disks. This is version 2.5b, an update to version 2.5 from disk 238. Shareware, binary only (source available from author). Author: Andreas Krebs
NComm	A terminal program for the Amiga based on comm version 1.34. Has hot keys for most program functions (including dialing up to 10 phone numbers), PAL and NTSC support for normal or interlaced screens, screen I/O greater than 2400 baud, ANSI/VT100 terminal emulation with full 8 color text support, IBM graphics, optional translation styles, split screen mode, full user control of color palette, full support for all European languages, full serial port control with baud rates up to 19200, script language, phonebook, keyboard macros, and more. Version 1.8, binary only. Author: DJ James, Daniel Bloch, et. al.
NoClick	A program which silences the clicking of empty drives on the B2000 under AmigaDOS 1.3. It should also work on an A500. This is version 3.6, an update to version to version 3.5 on disk 243. Includes assembly source code. Author: Norman Iscove
ScreenShare	A library and support programs that enable applications to open up windows on other applications' custom screens. For example, your editor may want to open a window on your terminal emulator's screen so you can compose a message while still being able to see the contents of the terminal's screen. Both applications must cooperate for the screen sharing to work. Version 1.2, includes source for interface portions. Author: Willy Langeveld
Ty	A text display program based on Amiga "less" version 1.0. Has both keyboard and mouse control of all functions, an intuition interface, and uses the Amiga specific keys (such as the Help key) correctly. Version 1.3, includes source. Author: Mark Nudelman, Bob Leivian, Tony Wills

Fred Fish Disk 247

AnalogJoystick	Software support for use of analog joysticks on the Amiga. Includes a driver, a header file for code that calls the driver, and an example program that uses the driver. Includes source. Author: Dave Kinzer
AssemTools	A collection of files which should be of great interest to Amiga assembly language programmers. The collection includes 140 macro routines which make assembly language programming a lot easier. There is also a library of routines containing buffered C-like file handling functions (fopen, fclose, fgets, fputs, etc) and a file name requester. All routines are re-entrant. Includes source for example programs using the macros and library, and a 65c02 cross macro assembler. Author: Jukka Marin
RemoteLogin	A couple of programs which make possible remote access to your Amiga. One program checks the serial port for an incoming call, and starts a program when it is detected. The other is a password protection program which allows starting various programs based upon login id, thus providing some minimal security for your computer. Includes source. Author: Dave Kinzer
XprLib	External file transfer protocol library. Document and code example for implementing external file transfer protocols using Amiga shared libraries. This is version 2.0, an update to the version on disk 240, with many extensions and enhancements. Includes sample XPR library and source. Author: Willy Langeveld

Fred Fish Disk 248

AmiGantt	A project definition and management tool designed to create a simple, interactive method of outlining the task required to complete a particular project, using the GANTT chart as the input format. AmiGantt displays the project in a multi-window mode with separate windows for the GANTT chart, task information input, resource histogram display, and Pert chart display. Up to 500 tasks may be defined for any project, and a project may contain other projects as tasks. Version 3.0.0, shareware, binary only. Author: Donald Tolson
CLI-Colors	A simple little program to change the colors of the border around a CLI window. Includes source in assembly code. Author: Michael Sinz
Flipper	Small, fast, Othello program. Does not use any look-ahead methods. Binary only. By Michael Sinz
Maze	An example of a fully re-entrant maze generation program written in assembly language using Manx's assembler. Includes source. Author: Michael Sinz
NetHandler	The Software Distillery's network file system handler (NET:), using Matt Dillon's DNET to mount one Amiga's devices on another Amiga. It also serves as an example file system written entirely in Lattice C. Version 1.0, includes source. Author: Software Distillery
Regex	An Amiga shared library version of the GNU regular expression package from the Free Software Foundation. A regular expression is a concise method of describing a pattern of characters in a string. By use of special wildcards, almost any pattern can be described. A regular expression pattern can be used for searching strings in such programs as editors or other string handling programs. Version 1.0, includes source. Author: Edwin Hoogerbeets, FSF, Jim Mackraz

Fred Fish Disk 249

Automata	Four cellular automata programs. AutomaTron is a one dimensional cellular automation, Crud is a automation based on a sum index rule, Demon is a cyclic space automation described in the Aug 89 Scientific American, and Life is one of the oldest and best known of all cellular automata. Includes source. Author: Gary Teachout
Slicer	Slicer computes and displays images of the Mandelbrot and Julia sets. Unlike many Mandelbrot programs that generate pictures directly, Slicer computes and stores an array of raw data which it may then render into pictures in a number of ways. Version 1.0, binary only. Author: Gary Teachout
TurMite	A two dimensional turing machine simulator. Imagine a small bug crawling around on your computer display moving one pixel at a time. At each step it uses its internal state number and the color of the pixel it's on as indexes into a set of tables to decide what color to change the pixel to, what direction to move, and what its new internal state should be. Source. By: Gary Teachout

Fred Fish Disk 250

ASimplex	An implementation of the Simplex algorithm for solving linear programs. It uses the standardized MPSX-format for input data files. This is version 1.5, an update to version 1.2 on disk 199. Changes include bug fixes, the ability to run from CLI, it's own window for I/O, and some new and improved commands. Includes source. Author: Stefan Forster
Gravity-Well	A celestial motion simulator that simulates the motion of up to twenty bodies in a Newtonian universe. The view of the simulation may be scaled, rotated in three dimensions or repositioned. Includes source. Author: Gary Teachout
Paranoids	An asylum escape game. Paranoids is a traditional board game played by drawing cards, rolling dice, and moving pieces around the board. Each player has six pieces, four patients and two doctors. The object of the game is to get all of your patients out of the asylum. This is version 1.0, binary only. Author: Richard Anderson and Gary Teachout
RPSC	A reverse polish scientific calculator. RPSC is a programmable RPN calculator in the Hewlett-Packard tradition. It supports operations with real numbers, complex numbers, matrices, and 3-D vectors, as well as storage and recall of labeled variables. Data and programs may be saved, loaded, or written as ASCII text, to AmigaDOS files. V1.1, binary only. By: Gary Teachout

Fred Fish Disk 251

Debug	A symbolic debugger for the Amiga. Features include symbolic disassembly, simple expression parsing, multiple breakpoints, memory fill, memory dump, single step in trace mode, skip over subroutines, etc. V2.10, binary only. Author: Jim Thibodeau and Larry LaPlume
DiskSalv	A disk recovery program for all Amiga file system devices that use either the Amiga Standard File System or the Amiga Fast File System. Disksalv creates a new filesystem structure on another device, with as much data salvaged from the original device as possible. This is version 1.42, an update to the version released on disk 212. Binary only. Author: Dave Haynie
DiskSpeed	A disk speed testing program specifically designed to give the most accurate results of the true disk performance of the disk under test. Automatically updates and maintains an ASCII database of disk results for tested disks. This is version 1.0, includes source in C. Author: Michael Sinz
Linstrom	Some miscellaneous small programs from the Linstrom family. Includes some basic games, some programs based on algorithms from the Computer Recreations column in Scientific American (demon, turmites, mountain), and a fish tank simulator. Includes source. Author: Lloyd Linstrom and family
Monopoly	A simulation of the Parker Brother's board game MONOPOLY. Binary only, source available from author. Author: Ed Musgrove
RoadRoute	A trip planner that takes a list of cities and a list of known routes between cities, and generates the distance and time required to reach your destination. V1.0, Source. Author: Jim Butterfield

Fred Fish Disk 252

CrossDOS	A "tryware" version of a mountable MS-DOS file system for the Amiga. This is a software product that allows you to read and write MS-DOS/PC-DOS and Atari ST formatted disks (Version 2.0 or higher) directly from AmigaDOS. This tryware version is a "readonly" version, which does not allow any writes to the disk. A fully functional version is available for a very reasonable price from CONSULTRON. V 3.05b, an update toFF 240. Binary only. Author: CONSULTRON, Leonard Poma
TrekTrivia	Very nice mouse-driven trivia type program for Star Trek fans. Contains 100 questions with additional trivia disks available from the author. This is version 2.0, an update to the version on disk 180, and includes selectable skill levels, a cheat mode, and 250K of digitized music. Binary only, shareware. Author: George Broussard
Zerg	An Ultima clone that takes your character through a simple but deadly fantasy world where you get to slaughter monsters, talk with the inhabitants of fully populated towns, embark on royal quests, purchase a plethora of weapons, cast spells, and otherwise occupy yourself while your computer is engaged in more important business. Version 1.0, binary only. Author: Mike Shapiro

Fred Fish Disk 253

DumpDiff	A small utility that prints the hexdumps of 2 files, with all differences between these two files highlighted. Version 1.0, includes source in Modula-II. Author: Fridtjof Siebert
Elements	Very nice interactive display of the the Periodic Table of Elements. Can display a large amount of pertinent data about a selected element along with a good deal of general and miscellaneous info. This is version 1.2a, an update to FF175. It loads faster, takes up less disk space, fixes a minor bug, and adds a couple of enhancements. Includes source in C. Author: Paul Thomas Miller
KeyMac	A keyboard macro processor that allows you to record keystrokes and then play them back. V0.1,Source in Modula-II. Author: Fridtjof Siebert
MegaWB	A program that makes it possible to make your WorkBench screen as large as you like. Version 1.2, Source in Modula-II. By: Fridtjof Siebert
MuchMore	Another program like "more", "less", "pg", etc. This one uses its own screen to show the text using a slow scroll. Includes built-in help, commands to search for text, and commands to print the text. Works with PAL or NTSC, in normal or overscan modes. Supports 4 color text in bold, italic, underlined, or inverse fonts. Version 2.5, this is an update to version 1.8 from disk 234. Includes source in Modula-II and assembly code. Author: Fridtjof Siebert
MultiSelect	A small program that makes it possible to select several icons on the workbench without having to press the Shift key. This is version 1.0, includes source in Modula-II. Author: Fridtjof Siebert
PowerPacker	A shareware command and data cruncher, with a full intuition user interface. Executable files which are crunched are automatically decrunched upon execution, thus saving precious disk space on systems without hard disks. Version 2.3b, binary only. Author: Nico Francois
WBShadow	A small program that creates a shadow for everything that's displayed on your WorkBench (Windows, Icons, Gadgets, Menus, Texts, etc). V 1.0, Source in Modula-II. Author: Fridtjof Siebert
With	CLI command that allows you to start any other CLI command several times and give it all the files that match a file pattern as an argument, one at a time. V 1.0, Modula-II Source. By: Fridtjof Siebert

Fred Fish Disk 254

Etale	Another "more" or "less" type file reader, which differs from the others in that it supports superscripts and subscripts at very low memory cost, and supports a complete Greek alphabet. Includes source. Author: William Hammond
MachII	A "mouse accelerator" program that also includes hotkeys, the features of sun mouse, clicktofront, popcli, title bar clock with a bbs online charge accumulator, and more. This is version 2.6, an update to version 2.4c on disk 163. Binary only. Author: Brian Moats
PatternLib	A sharable library which implements AmigaDOS pattern matching, and a program that compiles

"fd" files into library headers and interface stubs. Includes source in Draco. Author: Chris Gray (?), posted on BIX by Jeff White

SlotCars A fast action one or two player game of "dueling" slotcars. Shoot rockets at your opponent and avoid his. Binary only. Author: Brian Moats

Uedit Version 2.5b of this nice shareware editor. Has learn mode, a command language, menu customization, hyper text, and other user configurability and customizability features. Binary only, shareware, replaces version 2.4g on disk 189. Author: Rick Stiles

Fred Fish Disk 255

CyclicSpace A Griffeathian cyclic space generator program. Implements a cellular automaton as described in the August 89 issue of Scientific American. V 1.42, includes source in assembly code. Author: A. J. Brouwer

MakeIcon This program will make an icon (.info file) using image data from either another icon, or an IFF picture file. The image data is drawn on the screen so you can see exactly what your icon will look like. You can also go the other way, and make IFF files from icons, which can then be loaded into a standard IFF graphics editor. Version 1.1, binary only, source available from author. Author: Paul Blum

MED A music editor much like SoundTracker. A song consists of up to 50 blocks of music, which can be played in any order. Editing features include cut/paste/copy tracks or blocks, changing the vibrato, tempo, crescendo, and note volume. Other features include switching of the low-pass-filter on or off on a per song basis, and a cute little animated pointer of a guy doing "jumping jacks" in time to the music! This is version 1.12, binary only. Source for a player program included. Author: Teijo Kinnunen

RolandD110 . A program to transfer sound samples between the Amiga and a Roland D-110. Version 1.0, binary only. Author: Dieter Bruns

RolandS220 A program to transfer sound samples between the Amiga and a Roland S-220. This is version 2.0, an update to MIDIsoft version 1.0 on disk 199. Includes several enhancements. Binary only. Author: Dieter Bruns

SunMaze The 3d maze demo from disk 171, now expanded with shadows in the corridors to give more sense of direction. Includes source. Author: Werner Gunther, Shadows by Dirk Reisig

Fred Fish Disk 256

BlitDemons This program implements the Demons cellular automaton as described in the August, 1989, issue of Scientific American. Using extremely simple rules it exhibits rather complex behaviour. Uses the blitter to perform over 350,000 cell-generations per second. Version 1.0, includes source. Author: Walter Strickler

NameGame A game based on a popular type of word skill puzzle contest generally sponsored by newspapers. Binary only. Author: Mike Savin, Gladstone Productions

Stevie A public domain clone of the UNIX 'vi' editor. Supports window-sizing, arrow keys, and the help key. This is V3.7a, an update to FF217. Changes include the addition of ARP wildcard expansion for file names, support for the "lcmd" feature of vi, other small enhancements, and some bug fixes. Includes source. Author: Various, Amiga work by G. R. (Fred) Walter

Fred Fish Disk 257

ColorReq A color palette library callable from any program. Used to adjust the colors of any screen. Automatically adjusts to screen size, number of colors. Has many features including SPREAD, COPY, UNDO, RGB, HSV, as well as customizable gadgets. Binary only. Author: Jeff Glatt and Jim Fiore

FileIO An update to the file requester library that appeared on disk #203. This one has new features, include files, docs, and examples in C, assembly, and Basic. Binary only Author: Jeff Glatt and Jim Fiore based on original C by R.J. Mical

Vlt VLT is both a VT100 emulator and a Tektronix (4014 plus subset of 4105) emulator, currently in use at SLAC (Stanford Linear Accelerator Center). Although the VT100 part was originally based on Dave Wecker et al.'s VT100, many enhancements were made. The program requires ARP, and it has an ARexx port. XMODEM 1K/CRC and Kermit protocol support also included. Other features include support for additional serial ports, external file transfer protocols, and "chat" mode. The Tektronix emulation allows saving IFF files, PostScript files, and printing bitmaps to the printer. This is version 4.226, an update to version 4.065 on disk 245 and version 4.036 on disk 226. It comes in two versions, one with Tektronix emulation, and one without. Other changes include full XPR version 2.0 support, and a scrollback/review/history buffer. Binary only. Author: Willy Langeveld

Fred Fish Disk 258

Backup Backup and Restore allow you to backup any directory tree with optional compression, and later extract all or part of the tree. The protection, date, and file comment are saved with each file. This is V2.04, an update to FF168. Binary only. Author: Matt Dillon

DMouse A versatile screen & mouse blanker, auto window activator, mouse accelerator, popcli, pop window to front, push window to back, etc, widget. Includes DLineArt, a screen blanker replacement program for use with DMouse. This is DMouse version 1.20, an update to the version on disk 238 (also called version 1.20). Includes source. Author: Matt Dillon

STReplay A shared library which allows loading and playing of SoundTracker modules, even from high level languages like Basic or C, without any special effort. Includes source. Author: Oliver Wagner

Suplib The support library needed to rebuild various programs of Matt's from the source, including Dme, DMouse, etc. Update to FF169. Source. By: Matt Dillon

Fred Fish Disk 259

EFJ A fast action machine-code game (Escape From Jovi) featuring hi-res scrolling, large playfield, disk based high score list, stereo sound, multiple levels, a cheat mode, realistic inertia and gravitational effects, an animated sprite, and more. Use a joystick in port 2 to control the ship. This is version III, an update to the version on disk 148. Includes source in assembly code. Author: Oliver Wagner

Fred Fish Disk 260

Accordion Demo version of a solitaire type card game. The object of the game is to condense all the cards into one pile. The cards are dealt face up from left to right, one at a time. Piles are built by moving a card or pile from the left onto a card or pile to the right. V 1.0.1, binary only. Author: Steve Francis

Calculation Demo version of a solitaire type card game. The object of the game is to stack the cards into four ordered stacks, one that counts by one, another that counts by two, another that counts by three and another that counts by four. Version 1.0.2, binary only. Author: Steve Francis

CCLib An implementation of the standard C library, that is done as an Amiga shared library, containing over 140 functions. Version 1.3, binary only. Author: Robert Albrecht

SeaHaven Demo version of a solitaire type card game. The object of the game is to separate the deck into its four suits, each in an ordered stack from ace to king. Version 1.1, binary only. Author: Steve Francis

Fred Fish Disk 261

CopDis A copper list disassembler that can be run from the CLI or linked with and run directly from an application program. This is version 0.0a and includes source. Author: Karl Lehenbauer

ShowBiz A fun animation with mice, a dancing alligator, a sheep on a trampoline, and more. Includes source in "director format". Author: Robert Coms

XprZmodem An Amiga shared library which provides ZModem file transfer capability to any XPR-compatible communications program. V2.0, an update to FF 236. It adds support for XPR spec V2.0 capabilities, including automatic download activation, better user interface for setting options, improved transmission speed, and other minor enhancements. Includes source. Author: Rick Huebner

Fred Fish Disk 262

Indent This is version 1.1 of GNU Indent, a C source code formatter/indenter. Especially useful for cleaning up inconsistently indented code. Includes source. Authors: Developed by the University of California, Berkeley, the University of Illinois, Urbana, and Sun Microsystems, Inc. GNU version by Jim Kingdon, Amiga port by Dan Riley.

Jumble A quick "brute force" program for solving for anagrams. Not very elegant, but gets the job done. Includes source. Author: Mike Groshart

Lotto Lotto is designed to replace your user group's old shoebox full of membership numbers and names and add some pizzaz to the process of drawing for doorprizes at club meetings. Includes source. Author: Mike Groshart

QMouse A very small mouse accelerator (4K) written in assembly language, but with most of the features of its larger cousins. Not related to QMouse on disk 49. This is version 1.6, shareware, binary only. Author: Lyman Epp

QView A very small file view program (only 3K) written in assembly language, but with most of the features of its larger cousins. Version 1.1, shareware, binary only. Author: Lyman Epp

WorldDataBank A project using geographical data, declassified and made available by the CIA under the Freedom of Information Act, to draw a Mercator projection of any area of the Earth that you would like to inspect, in various degrees of magnification. Also includes a program that displays a "satellite view" of any region. Version 2.0, includes source. Author: The CIA, Mike Groshart, Bob Dufford

Fred Fish Disk 263

Sentinel A large ray-traced animation created with Turbo Silver SV, Deluxe Photolab, Deluxe Paint III, and the Director. It consists of approximately 60 to 70 frames of animation, rendered during a period of about three and a half weeks. This is Bradley Schenck's entry to the 1989 BADGE Killer Demo contest, and won first place in the contest. Because of its size, it has been split across two disks. The rest of the files are on disk 264. Requires 3Mb or more of memory to run. Author: Bradley Schenck

Fred Fish Disk 264

Sentinel A large ray-traced animation. This is Bradley Schenck's entry to the 1989 BADGE Killer Demo contest, and won first place in the contest. Because of its size, it has been split across two disks. The rest of the files are on disk 263. Author: Bradley Schenck

Fred Fish Disk 265

VAUX-Killer A very funny animation which won 2nd place in the 1989 BADGE Killer Demo Contest. Because of its size, the demo is split across two disks. The other files are on disk 266. Two floppy drives, or a hard disk, are strongly recommended. Binary only. Author: Roger Curren

Fred Fish Disk 266

VAUX-Killer A very funny animation which won 2nd place in the 1989 BADGE Killer Demo Contest. Because of its size, the demo is split across two disks. The other files are on disk 265. Two floppy drives, or a hard disk, are strongly recommended. Binary only. Author: Roger Curren

Fred Fish Disk 267

Diglib An Amiga device independent graphics library for fortran applications. This is an enhanced and debugged version of a public domain library, the development of which was sponsored by the US Government. This library is required for part of the Matlab package, also included on this disk. Includes source in FORTRAN. Author: Hal Brand, Craig Wuest, James Locker

Mackie A versatile cli/macro-key initiator based on POPCLI with a unique method of "screen-blanking". I won't say more, just try it! This is version 1.3, an update to version 1.2 from disk 189. Now includes automatic generation of different patterns and some bug fixes. Includes source. Author: Tomas Rokicki

Matlab A FORTRAN package (MATrix LABoratory) developed by Argonne National Laboratories for in house use. It provides comprehensive vector and tensor operations in a package which may be programmed either through a macro language or through execution of script files. Supported functions include sin, cos, tan, arcfunctions, upper triangular, lower triangular, determinants, matrix multiplication, identity, hilbert matrices, eigenvalues, eigenvectors, matrix roots, matrix products, inversion, and more. Amiga specific features include workbench startup, polar plots, contour plots, enhanced plot buffer control, and algorithmic plot display generation. Includes source in FORTRAN. By: Cleve Moler, Jim Locker

Fred Fish Disk 268

Doctor_A This animation of Amiguy on the basketball court is Marvin's entry to the 1989 BADGE Killer Demo Contest. Animation source (for SculptAnimate-4D) is available from the author. By: Marvin Landis

Klide This line art demo is Jerry's entry to the 1989 BADGE Killer Demo Contest, where it won 4th place. Klide uses line mode blitter code which is capable of rendering short vectors at a rate up to 15,000 lines/second. Binary. By: Jerry Kallaus

OnlyAmiga This demo is Rob's entry to the 1989 BADGE Killer Demo Contest, where it won 9th place. It demonstrates sound, multitasking, HAM color, the blitter, and more. Binary only. Author: Rob Peck

Fred Fish Disk 269

Calendar A program that generates calendars in any one of 10 standard formats for any year after 1900. Binary only. Author: Pierre A du Parte

ChessTutor Chess tutor is a program designed to introduce novice chess players to the basics of the game. Shareware, written in AmigaBASIC. Author: William Jordan

PropGadget Example code for using proportional gadgets, written in assembly code and C, that can be called from your own application. Includes source. Author: Jerry Trantow

RadBoogie This demo, which won 7th place in the 1989 BADGE Killer Demo Contest, uses almost all features of the Amiga extensively, including the copper, blitter, sprite hardware, 68000 machine language, and preemptive prioritized multitasking. Includes source. Author: Dave Quick, Mark Riley, Tomas Rokicki

ShowDisk A useful program that graphically shows the map of sectors used on floppy drives by one or more files. The mapping is color coded so you can identify what sectors are used by the various directories and files. Includes source in assembly language. Author: Bernhard Meisner

SpinPointer While going through some musty archives I found this little gem that got overlooked before. It is a short source module that provides a "busy" indicator replacement for the standard mouse pointer. Includes source. Author: Mark Rinfret

Fred Fish Disk 270

ColumnSet A text filter program that takes as input a file with one word per line and produces a file with these words laid out in the same order in even columns, as many as will fit across the output screen or page with at least one space between columns. Includes source in Modula-2. By: Kent Paul Dolan

MRBackUp A hard disk backup utility that does a file by file copy to standard AmigaDOS floppy disks. Includes an intuition interface and file compression. V3.3d, update to FF 170. Binary only. By: Mark Rinfret

TooMuch3D This animation is Jim's entry to the 1989 BADGE Killer Demo Contest, where it won 10th place. It is a warning to those of you who spend too much time in front of your computer monitors. Binary only. Author: Jim Robinson

Fred Fish Disk 271

CPUStandoff This cute "computer wars" animation is Bob's entry to the 1989 BADGE Killer Demo Contest. Lots of visual jokes in this one. Binary only. Author: Bob Janousek

LaserBoing This ray-traced animation with sound is Mike's entry to the 1989 BADGE Killer Demo Contest. This "Amiga Boing" ball is just loaded with energy! Binary only. By: Mike van der Sommen

Fred Fish Disk 272

AmigaPunt A program designed to predict the performance of horses in a race. The premise is that the factors affecting a horse's performance, and ultimately the result of the race, can be given a value. Binary only. Author: Pierre A du Parte

Balloon This animation with sound effects is Dave's entry to the 1989 BADGE Killer Demo Contest. Binary only. Author: Dave Schreiber

Spigot This ray-traced animation, using overscan HAM and sound effects, is Eric's entry to the 1989 BADGE Killer Demo Contest– it won 6th place. Binary only. By: Eric J. Fleischer (Dr Gandalf)

Fred Fish Disk 273

BattleForce A nicely done shareware game, submitted by the author, that simulates combat between two or more giant, robot-like machines. This is version 3.61, an update to version 3.01 on disk 205. Binary only. Author: Ralph Reed

PennyWise An easy to use, flexible cashbook program using an Amiga Intuition interface. It can be used to keep track of the financial transactions of a cheque, bank, business, or similar account. Shareware, binary only. Author: Pierre A du Parte

Fred Fish Disk 274

HP11 Emulates an HP11C calculator including the program mode. Features an ON/OFF button that turns the calculator into an icon that will sit and wait until you need it again. Version 1.1, an update to FF153, and includes a few bug fixes and minor changes. Binary only. By: David Gay

KeyBiz This little hack will make you think you have mice scurrying around in the back of your computer. Includes source. Author: Mark Schretlen

LookFor A general "find that file" utility which is handy for hard drives, multiple drives, and multilayered paths. Includes source. Author: Mark Schretlen

SlideMaster A slideshow program that can show any IFF ILBM picture, including HAM, extra half bright, hires, interlace, and overscan, using several different wipes. Also has an ARexx port and is fairly small. Version 0.1, binary only. By Aric Caley

Snap A tool for clipping text or graphics from the screen, using the clipboard device. Snap finds out character coordinates automatically, handles different fonts, keymaps, accented characters, and more. Version 1.3, includes source. Author: Mikael Karlsson

Xoper Very comprehensive program to monitor and control system activity. Monitor cpu, memory usage, ports, interrupts, devices. Close windows, screens, show loaded fonts or last Guru code number. Clean up memory, flush unused libraries, devices, fonts. etc. and a whole bunch more! Spawns its own process. A very handy background task to have loaded. This is version 2.0, an update to FF228, and has a completely rewritten interface and an iconify feature. Assembly source included. By Werner Gunther

Fred Fish Disk 275

Vt100 Version 2.9 of the original Amiga vt100 emulator with kermit and xmodem file transfer. This version adds an AREXX port, new script and AREXX commands, some bug fixes, the ability to use custom external protocol modules (not XPR), and support for zmodem. Update to version 2.8 on disk 138. Includes source. Author: Dave Wecker, Tony Sumrall, Frank Anthes, and Chuck Forsberg

Fred Fish Disk 276

Blit This animation is Richard's entry to the 1989 BADGE Killer Demo Contest. An interesting feature of this animation is that it uses the Copper to show the lower right corner of the screen in Hi-Res, while leaving the rest of the screen in Lo-Res. Binary only. Author: Richard Addison

ClickDOS A "directory utility" type program which is reasonably small, uses a single window on the Workbench screen (which can also be iconified), does not rely on other programs for most of its functions, and is very memory efficient. This is version 1.10, binary only. Author: Gary Scott Yates

DateRequester A module that provides Intuition based support for soliciting a date value from the user. It supports both point-and-click selection of date values and direct entry of the individual components. It also includes a standalone ARexx driven date requester program which can be called from ARexx macro files. Includes source. Author: Mark Rinfret

Fred Fish Disk 277

ARTMARTM (Amiga Real Time Monitor) displays and controls system activity such as tasks, windows, libraries, devices, resources, ports, residents, interrupts, and vectors. Version 0.9, binary only. Author: Dietmar Jansen and F. J. Mertens

Icon A high-level programming language with extensive facilities for processing strings and lists. Icon has several novel features, including expressions that may produce sequences of results, goal-directed evaluation that automatically searches for a successful result, and string scanning that allows operations on strings to be formulated at a high conceptual level. Icon resembles SNOBOL4 in its emphasis on high-level string processing and a design philosophy that allows ease of programming and short, concise programs. This is version 7.5 of the public domain implementation of Icon from the University of Arizona. It is an update to version 6.0 from disk 81. Binary only. Author: Ralph Griswold, Clinton Jeffery, et. al.

LabelPrint A program that allows you to easily print labels for your disks. This is version 3.0, an update to version 2.5 from disk 238. Shareware, binary only (source available from author). By: Andreas Krebs

LPE LaTeX Picture Editor is a graphical editor for producing "pictures" for the LaTeX system, which may be imported by LaTeX. You can draw boxes,

	dashed boxes, lines, vectors, circles, boxes with centered text, and plain text. This is version 1.1, an update to version 1.0 on disk 243, and includes some new drawing tools, enhanced user interface features, optimized code, and some bug fixes. Binary only. Author: Joerg Geissler
WBAssign	A small WorkBench program that creates AmigaDOS assignments without having to open a CLI. Assignments may be made by specifying a complete path (as supported by the CLI command), or by specifying a path relative to the current directory. This allows a program and its assigns to be moved easily. In addition, WBAssign can create assigns specified in the icon files of other programs located anywhere in the system. This is version 1.20, binary only. Author: John Gerlach Jr.
WBRes	A program that allows WorkBench users to have resident programs, as in the resident capability of WShell, the ARP shell, and the WB1.3 Shell. Version 1.2b, shareware, binary only. Author: John Bickers

Fred Fish Disk 278

AmigaTrek	Three stories which are a parody of the Star Trek series, with an Amiga flavor. By: Mike Smithwick
ASpice	A version of the SPICE 2G.6 circuit analysis program which has been modified to run in the Amiga environment. The program arrays are adjusted to require one tenth the memory of the DEC VAX version. Although this does not usually put much of a constraint on circuit analysis, some users who are used to the full mainframe environment may have to be more aware of the memory demands of their analysis. Requires a minimum of 1 MB memory. This version neither supports nor requires the 68020 processor or 68881 coprocessor. This is Amiga version 5.1, update to FF177. Binary only. Authors: Many, see Documentation. Amiga port by Dan Warns.
Frag	Two CLI utilities that show disk and file fragmentation on AmigaDOS floppies. Includes source. By: David Gay

Fred Fish Disk 279

Ash	A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. Version 1.0, binary only. Author: Steve Koren
MouseClock	A clock and free memory display utility that generates a small display tied to your mouse, using two hardware sprites as the display area. Version 1.2, includes source. Author: Olaf Barthel
MRBackUp	A hard disk backup utility that does a file by file copy to standard AmigaDOS floppy disks. Includes an intuition interface and file compression. This is version 3.3e, an update to FF270, to fix a serious bug in that version. Binary only. By: Mark Rinfret
MRPrint	A detabbing print utility that sends text files to either the printer device or the standard output. Besides expanding tabs, it will also generate page headers, line numbers, and new margins. Version 3.4, includes source. By: Mark Rinfret

Fred Fish Disk 280

Berserker	A virus detection program that can detect various forms of the common bootblock and link type viruses. Rather than checking for a specific virus, it looks for conditions that indicate a possible virus infection, thus it can detect new strains of similar viruses. Version 3.0+, includes source in assembly. Author: Ralf Thanner
CM	A celestial mechanics simulator with an Intuition interface. You construct a layout of celestial bodies and specify various parameters for the bodies and the simulation. CM then animates the bodies according to the laws of gravitational attraction. Setups may be saved to disk to later reinact interesting scenarios. Version 1.0, includes source. Author: W. John Guineau
Graph	A program that draws mathematical functions on a plane. Text and axes may be added, and the result saved to disk or printed. Uses a full Intuition interface with multiple windows (one per graph), requesters, etc. Version 1.0, includes source. Author: David Gay

Fred Fish Disk 281

Diff	GNU diff and diff3 utilities, version 1.10. This version provides all the features of BSD's diff plus options to diff non-ASCII files, to ignore changes that just insert or delete blank lines, to specify the amount of context for context diffs, plus more. This version of GNU diff is part of the RCS package found on FF282. Includes source. By: Mike Haertel, David Hayes, Richard Stallman & Len Tower. Amiga port by Raymond Brand & Rick Schaeffer.
DiffDir	Compares the contents of two directories, generating a list of differences to the standard output. Detects files or directories present in one hierarchy but not the other, file attributes that are different (dates, flags, comments, etc), and differences in file size. Version 1.1, an update to FF188. Includes source. Author: Mark Rinfret
FarPrint	Debugging functions for programs which don't have any links to their environment. FarPrint consists of two major parts; a harbour process open to receive and distribute messages and requests, and a set of C functions to be linked into any program wishing to communicate with the FarPrint main process. Version 1.3, includes source. Author: Olaf Barthel
LoadImage	An IFF ILBM reader that accepts overscanned pictures, allows you to scroll around in the bitmap if the picture is larger than the current display, works on both PAL and NTSC machines, supports color cycling using interrupt code, and supports printing of image portions. Version 1.9, includes source. Author: Olaf Barthel
MRARPFile	Extended ARP file support package that adds an orthogonal set of routines which support generalized I/O with resource tracking while using the ARP library. Includes source. By: Mark Rinfret
MRMan	A package which contains an Amiga document reading system similar to the "man" command on UNIX systems. It offers a high degree of flexibility in the naming and placement of document files on your system. This is version 1.0 and includes source. Author: Mark Rinfret

Fred Fish Disk 282

PrintHandler	A custom PRT: driver which offers easy single sheet support as well as limited data spooling. Version 1.1, includes source. Author: Olaf Barthel
RCS	The Revision Control System (RCS) manages multiple revisions of text files. RCS automates the storing, retrieval, logging, identification, and merging of revisions. RCS is useful for text that is revised frequently, for example programs, documentation, graphics, papers, form letters, etc. This is RCS version 1.2, and includes source (the source to the GNU diff program used with this distribution of RCS can be found on disk 281). By: Walter Tichy. Amiga port by Raymond Brand.

Fred Fish Disk 283

Bref	A cross reference program for AmigaBASIC code. Generates a list of the BASIC code with lines sequentially numbered, plus a table showing all variables and labels used in the code, and the line numbers where they were used. Created from the CREF program on FF166, which was written by Mike Edmonds and Joel Swank. Version 1.01, includes source. By: Dick Taylor
CWDemo	Demo version of a pop-up utility to control the color register assignments of Intuition custom screens. V3.2, an update to FF238. Binary only. By: Kimbersoft
FullReset	A program to get rid of all viruses, vector modifying programs, and residents, by forcing a specific reset. Binary only. Author: Jurgen Klein
MarbleSlide	The aim of this game is to build a slide on a 10 x 11 board of pieces that move around, allowing the marble to reach the goal piece. You play against time. Also includes a board editor so you can build custom boards. Binary only. Author: Peter Handel
SensoPro	You try to remember and mimic the sound/color sequence played by the computer. Each time you get it right, another sound/color is added to the sequence. Great practice in case you ever find yourself in a "Close Encounters of the Third Kind" experience. Binary only. Author: Peter Handel
WatchMan	A little screen hack inspired by "EyeCon" on Sun systems. Includes source. Author: Jonas Petersson

Fred Fish Disk 284

ARPTools	A group of small utility programs requiring ARP, that have been created to address some deficiencies of the ARP CLI environment, especially to exploit the potential offered by non-named pipes in the ARP shell. Version 1.0, includes source. Author: Fabio Rossetti
Back	Two programs to assist users of Matt Dillon's Backup/Restore program in making error-free VERIFIED backups onto floppy disks. Also useful as a trackdisk device example. Includes source. Author: Stephen Vermeulen
Dme	Version 1.38 of Matt's text editor. Dme is a simple WYSIWYG editor designed for programmers. It is not a WYSIWYG word processor in the traditional sense. Features include arbitrary key mapping, fast scrolling, title-line statistics multiple windows, and ability to iconify windows. Update to FF169, includes source. Author: Matt Dillon
FileTest	This routine is used to recursively descend the file system tree from a specified directory location, reading the files into memory (if they will fit) as it goes. Useful as a complete test of file system integrity. Includes source. By: Stephen Vermeulen
IconTools	Here are some tools for icon tricks. Note that these tools are really hacks because they exploit some areas of the .info files that the current version of WorkBench does not clear or reset upon loading the icon. There are three programs here which allow WorkBench drawer windows to appear in non-standard colors and allow you to move the position of the file name text to anywhere in the icon's graphic. Released to the public in the hope that 1.4 will allow more flexible user customization of the WorkBench appearance. Includes source. Author: Stephen Vermeulen
RecurDir	A recursive directory program that is useful as an aid in ZOOing files in nested directories. Allows one to easily ZOO the complete contents of a disk. Includes source. Author: Stephen Vermeulen

Fred Fish Disk 285

AvailMem	A small free memory counter that continuously displays the amount of free chip and fast memory in bytes (as opposed to K). Version 1.03. Includes source. Author: Dave Schreiber
DynaShow	A program and example image using a dynamic HiRes technique to display up to 4096 colors in high res with overscan. Dynamic HiRes uses a different 16 color palette on each scan line. Version 1.1, binary only. Author: NewTek
'Liner	'Liner is a freely distributable outliner. It can be used to create outlines of any length, in a number of different formats, and can save the outlines as straight text for export to other programs. Version 1.32. Includes source. Author: Dave Schreiber
MSizer	A program that allows you to resize a window from any corner when holding down the left mouse button and the left Amiga key. Includes source. Author: Khaled Mardam-Bey
Plasma	A plasma cloud generator program that uses the extra halfbrite mode. Plasma clouds are a special form of fractal which show very smooth color gradations. Version 1.f, includes source. Author: Roger Uzun
Rubik	Translation to C of a Rubiks Cube solver program originally written in Basic by John Murphy. Includes versions to do an "unwrapped" 2D solution, and a more visual 3D solution. Version 0.0, includes source. Author: Roger Uzun

Fred Fish Disk 286

CCutils	Eight small CLI utilities that use the cclib.library shared library. Includes a program to display disk usage on your menu bar, a program to check the integrity of IFF files, a program to remove shared libraries from memory if they are not being used, and more. Binary only. Author: Robert Albrecht
EW	Patch for Intuition OpenWindow() and CloseWindow(), creating a Mac-style frame whenever a window is opened or closed. Very short, includes source in assembler. Author: Oliver Wagner
FastDisk	A disk optimizer providing two ways of optimizing. Originally written by Thorsten Stolpmann. This is version II, now featuring an Intuition interface, ARP support, bug hunting, and Lattice C compatibility, done by Oliver Wagner. Includes source in C. Author: Thorsten Stolpmann and Oliver Wagner
S220to8SVX	Converts sound samples from a Roland S-220/S-10/MKS-100 to 8SVX IFF 8-bit samples. Version 1.0, binary only. Author: Dieter Bruns
Txt2Exe	This program takes a text file, creating a runnable command which will output the text. Allows various operations to be done on the text. Binary only. Author: Oliver Wagner
Uedit	Version 2.5d of this nice shareware editor. Has learn mode, a command language, menu customization, hyper text, and other user configurability and customizability features. Binary only, shareware, update to FF254. By: Rick Stiles

Fred Fish Disk 287

DAsm	A multipass, symbolic, macro assembler for multiple target machines, including 6502, 68705, 6803, and 6811. Supports conditional assembly, addressing mode overrides, arbitrary number of named segments, pseudo-ops for repeat loops, data generation, etc. Version 2.12, includes source. Author: Matt Dillon
FullView	A text viewer that uses gadgets at the bottom of the screen (thus can display text 80 columns wide), opens up to the full height of the Workbench screen, has fast scrolling, and can work with compressed files (file compression program included). Shareware, binary only, source available from author. V1.1, update to FF242. Author: Jonathan Potter
JPDirUtil	A directory-utilities type program with many built-in commands, and 16 customisable gadgets. User configurable in many ways. Can be iconified to Workbench screen. This is version 1.11, binary only. Author: Jonathan Potter
MouseCoords	A small assembly utility which shows you the current position of the mouse pointer. Can be "jumped" to operate on any screen. Includes source in assembly. Author: Jonathan Potter
OSK	A software keyboard, which allows you to type using the mouse. Can be made to send keystrokes to any window, and can be iconified. Includes source. Author: Jonathan Potter
PopDir	A small utility which "pops open" to help you look at the contents of a particular directory on demand. Version 1.6, an update to version 1.4 on FF204. Includes source. Author: Jonathan Potter
Unshar	This program extracts files from Unix shar archives. It scores over similar programs by being small and fast, handling extraction of subdirectories, and recognising a wide variety of 'sed' and 'cat' shar formats. Version 1.1, includes C source. Author: Eddy Carroll
VirusX	Version 4.0 of a popular virus detection/ vaccination program. This is an update to FF216. Includes a check for the new Xeno virus. Author: Steve Tibbett, Dan James, Jim Meyer
ZeroVirus	A fully integrated virus checker and killer, with bootblock save and restore features. Finds both bootblock and file based viruses. Uses Brainfiles to recognise viruses, and has "on-line" Brainfile editing facilities. Can be iconified to Workbench screen. This is version 2.01, an update to FF242. Binary only. Author: Jonathan Potter

Fred Fish Disk 288

DiskSpeed	A disk speed testing program specifically designed to give the most accurate results of the true disk performance of the disk under test. Automatically updates and maintains an ASCII database of disk results for tested disks. This is version 2.0, an update to FF251, with a few new features and a cleaner user interface. Includes source in C. Author: Michael Sinz
PlotData2D	Plots data onto a custom user defined screen and window, reading the plot and screen/window definitions, along with the X and Y data pairs, from a disk file. Supports linear, log-log, and semi-log axis plots. The data can be plotted with

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lines, symbols, or both. Includes numerous example plots. Version 1.0, includes source in Fortran. Author: Robert C. Singleterry Jr.

Scripit	A script language that allows you to automate actions you would normally have to do manually. Scripit can do anything that you do manually, by either the mouse or keyboard, by using a set of commands that instruct Scripit to simulate specific mouse or keyboard actions. Also has an ARexx port, so it can be driven by ARexx allowing ARexx control over programs that do not have ARexx ports. Includes both a recorder to generate scripts and a player to execute them.Version 1.20, binary..

Fred Fish Disk 289

AmiGo	A Go board and player for the Amiga. You can play against another human, against the Amiga, or have the Amiga play itself. Version 1.0, includes source. Author: Todd Johnson, Stoney Ballard
Atree	A disk utility which imitates similar utilities widely available on IBM compatibles (PC Tools, Xtree, QuickDos, etc). The intent is to allow the user a graphic representation of the entire directory structure on a disk device, including the files in each directory, and the capability of moving quickly through the tree to a directory to access its files. Version 1.7, binary only. Author: Don Schmidt
LHArc	An archive program like Arc and Zoo, with a heavy emphasis maximum compression for minimum archive size, using LZHUF compression. This is Amiga version 1.0 (compatible with MSDOS version 1.13). Binary only. Author: Paolo Zibetti
Orbit	Plots the ground trace of satellites on a map of the earth, using the orbital elements for some 130 satellites, from a list which is updated every two weeks on Compuserve. Version 1.2, binary only. Author: Timothy Middendorf
TreeWalk	A command for visiting all the files of a subtree of an Amiga file system, testing every file in the specified subtree against a supplied "filter" expression, and if the file passes through the filter, to issue the specified command with that file as one of the arguments. It is designed to be reasonably fast, robust, and not use a lot of stack space or any other critical resources. Includes source. By: Mike Meyer

Fred Fish Disk 290

DPlot	A simple display program for experimental data, with the goals of supporting paging through lots of data and providing comfortable scaling and presentation. V2.0, an update to FF237, and incorporates several significant enhancements. Binary only. Author: A. A. Walma
IPC	An IPC (Inter-Process Communication) package, with the goal of creating a standard for IPC on the Amiga that is flexible enough to handle the widest possible range of applications. The protocol used addresses different problem areas than ARexx, and emphasizes different aspects of the communication process, such as fast communication and preservation of data structure. Includes source. Author: Pete Goodeve and Peter da Silva
KillReq	A small program which disables Intuition's AutoRequest function. In particular, this prevents AmigaDOS from putting up system requesters, which is useful if you are operating your Amiga remotely and can't use the mouse to click CANCEL. Unlike similar utilities which affect only a single CLI, KillReq disables ALL requesters. This is version 1.0 and includes C source. Author: Eddy Carroll
Xicon	Xicon lets you use icons to call up scripts containing CLI commands. V2.5, an update to FF157. New features include automatic selection of the correct execution directory, the option to have keyboard interaction, and the use of IF, ELSE, etc DOS commands. Binary only. Author: Pete Goodeve

Fred Fish Disk 291

GMC	A console handler with command line editing and function key support. GMC provides extended command line editing, function key assignment in four levels, extended command line history, online help for functions in the handler, and an iconify function. Version 4.0, binary only. Author: Gotz Muller
Keyboard	Functions to translate RAWKEY Intuition messages into usable keycodes. Includes source. Author: Fabbian Dufoe
Sim	A simulator for register-transfer nets, which are used to describe hardware systems. This version also provides a compiler to define new devices in addition to Sim's internal devices. V4.2, an update to FF229. Binary only. Author: Gotz Muller
SKsh	A ksh-like shell for the Amiga. Some of its features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. V1.2, an update to FF279, where it was called ash. Binary only. Author: Steve Koren

Fred Fish Disk 292

Devstat	Assembly code example of locating and listing information about all mounted devices. Includes source. Author: Fabrice Lienhardt
FileRequest	Assembly code example of a file requester. V2.0, an update to FF173, where it was called FileSelect. New features include 3 speed scrolling of filenames and ghosting of unavailable devices. Includes source. Author: Fabrice Lienhardt
MultiPlot	A package for making 2D plots conveniently. Tim Mooney wrote the original program, which was then enhanced by Alan Baxter with a nicer user interface, support for the PLT: device, and support for file conversions. Rich Champeaux and Jim Miller wrote the PLT: handler which emulates a plotter by accepting HP-GL commands, creating a raster image, then dumping it to any preferences supported graphics printer. This is version XLN and includes source to MultiPlot. Update to FF231, where it was called just "Plot". This version is 2D only. Author: Alan Baxter, Tim Mooney, Rich Campeaux, Jim Miller

Fred Fish Disk 293

ClockDJ	A utility which combines a clock, mouse accelerator, screen blanker, window manipulator, function keys, and macros into a single program, written in assembly language for maximum efficiency. Includes an ARexx port. Version 4.07, binary only. Author: David Jenkins
CrcLists	Complete CRC check files for disks 001-292 using the brik program. These were made directly from my master disks. I have switched to brik, from the crc program used to make the lists on disks 133, 146, and 173, because it has more features and because source is available. Update to FF233. Author: Fred Fish

Fred Fish Disk 294

DNet	A link protocol that provides essentially an unlimited number of reliable connections between processes on two machines, where each end of the link can be either an Amiga or a Unix (BSD4.3) machine. Works on the Amiga with any EXEC device that looks like the serial.device. Works on UNIX with tty and socket devices. Achieves better than 95% average throughput on file transfers. V2.10.13, an update to FF220. Includes sources for both the Amiga and Unix versions. Author: Matt Dillon
FmsDisk	A file based trackdisk simulator, useful for creating a floppy-like partition on your hard disk (so you can diskcopy to a floppy) without actually having to create a special partition for it. Also useful for testing new filesystems and such. Supports up to 32 units, with either the old filesystem or the new fast filesystem. Includes source. Author: Matt Dillon

Fred Fish Disk 295

GnuGrep	The grep program from the GNU project. Replaces grep/grep, egrep, and bmgrep. Currently does not expand Amiga style wildcards, so if you wish to scan multiple files you will need to use it with a shell that does this for you. This is version 1.5, an update to version 1.3 on disk 204. Includes source. Author: Many (see README file)
Lhwarp	A program which will read tracks directly from your floppy disk, compress them using adaptive huffman encoding, and output them to a file. The resulting file can be used by lhwarp to reconstruct an image of the original disk. This is version 1.03 and includes source. Author: Jonathan Forbes
MandelMountains	A program that renders three-dimensional images of blowups of the Mandelbrot set. Includes several example images. Version 1.1, shareware, binary only. Author: Mathias Ortmann

Fred Fish Disk 296

Comal	Demo of AmigaCOMAL (missing only SAVE), an incremental p-code compiler from Denmark. COMAL is a language with the design goal of combining the modern structured approach of Pascal with the ease of use and interactivity of BASIC. There are versions of COMAL for IBM, VAX, CP/M, C-64, Amiga and various European operating systems. Includes a complete turtle graphics package. Is perfect for education yet powerful enough for applications programming. Version 2.0, binary only. Author: Svend Daugaard Pedersen Freddy Dan Dalgas Kristiansen
Patch	A port of the very useful UNIX utility which applies context diffs to text files to automatically update them. This is a port of version 2.0.1.6 (patch level 12), which Eric has dubbed Amiga version 1.0. It is an update to an earlier version on disk 129. Includes source. Author: Larry Wall, Amiga port by Eric Green

Fred Fish Disk 297

Clean	A small program written in assembly code, to be used in conjunction with a cleaning disk, to clean your floppy drive heads. Version 1.0, includes source. Author: Dan Burris
DevKit	A collection of C and ARexx language programs to facilitate the software development process. With DevKit, you can launch your compiler from within your editor, have the cursor positioned on your errors, look up the autodoc page for any Amiga function at a single keystroke, find a system structure within the include files, or find any function in the code you are writing. Version 1.2, includes source. Author: Peter Chema
Elements	Very nice interactive display of the the Periodic Table of Elements. Can display a large amount of pertinent data about a selected element along with a good deal of general and miscellaneous info. V 1.3, update to FF253. It adds a non-interlace mode and extend selection of two elements. Binary only, shareware. Author: Paul Thomas Miller
Hypno	A "bouncing polygons" type program like Mackie, LineArt, and Bezier. Includes source in C. Author: Markus Schmidt
Jed	A nicely done, intuition-based editor that is quite user-friendly. Features word-wrap, auto-indent, newcli, alt buffer, split-window, keyboard macro, help, printing, and more. V1.1, Update to FF180. Shareware, binary only. Author: Dan Burris
SuperMenu	An information display system you can use to quickly and easily display text files (and sections of text files) with the press of a button. Version 1.62, shareware, binary only. Author: Paul Thomas Miller
WriteIcon	Sample code that creates an icon using a compiled-in image, the source of which can be created with Icon2C on FF56. Version 1.0, includes source in C. Author: Dan Burris

Fred Fish Disk 298

BBChampion	This is BootBlockChampionIII, a very nicely done program that allows you to load, save, and analyze any bootblock. V3.21, an update to FF244. New features include checks for five different LAMER viruses and some other enhancements. Binary only. Author: Roger Fischlin
DClock	A "Dumb Clock" utility that displays the date and time in the Workbench screen title bar. Uses only about 2 percent of the CPU time and about 10Kb of memory. Also has an alarm clock feature and audible beep for programs that call DisplayBeep. Version 1.5, includes source. Author: Olaf Barthel
Fenster	A program which can operate on windows owned by another program, to close them, change their size, refresh gadgets, move the window to the background, etc. V2.0, an update to FF245. Includes source. Author: Roger Fischlin
FileMaster	A file editor like NewZap or FedUp, which allows you to manipulate bytes of a file. You may also change the file size or execute a patch. Version 1.11, includes source. Author: Roger Fischlin

Fred Fish Disk 299

Hangman	A simple hangman program similar to one seen on some UNIX machines. Currently runs only from CLI. Includes source in C. Author: Gary Brant
Rxil	An ARexx interface library that makes it easy for programs to implement a complete, robust ARexx interface with minimal effort. Version 1.0, includes source. Author: Don Meyer
SceneGenDemo	Demo of a program called Scene Generator, that generates very realistic looking landscapes. This program is an enhanced, low cost commercial version, of the Scenery program included on disk 155. This is version 2.03, binary only. Author: Brett Casebolt
Yacc	This is a port of Berkeley Yacc for the Amiga. This Yacc has been made as compatible as possible with the AT&T Yacc, and is completely public domain. Note that it is NOT the so-called Decus Yacc, which is/was simply a repackaging of the proprietary AT&T Yacc. Amiga version 1.0a, includes source. Author: Bob Corbett, Amiga port by Eric Green

Fred Fish Disk 300

SuperEcho	A neat program to be used with Perfect Sound-like audio digitizers that generates LIVE audio effects, including Echos, Deep Voice, Squeaky Voice, Many People, M-M-Max Headroom and much more. Binary only. Author: Kevin Kelm
TACL	An adventure player for games written with The Adventure Construction Language, a commercial computer language. Includes two sample games; one is text-only and the other is text-graphic. Binary only, plus the TACL source code that was used to write the graphic adventure. Author: Kevin Kelm and Rhett Rodewald
TitleGen	A simple script language program for generating vertically crawling title sequences in any font and up to 500 lines long. Good for video production. Version 1.6, binary only. Author: Kevin Kelm
XenoZap	A program that recursively descends into directories, disabling the Xeno virus in all executable files that it finds. Version 1.0, includes source in Modula-2. Author: Kevin Kelm

To Be Continued......

In Conclusion

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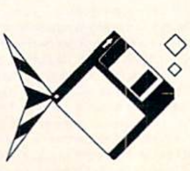

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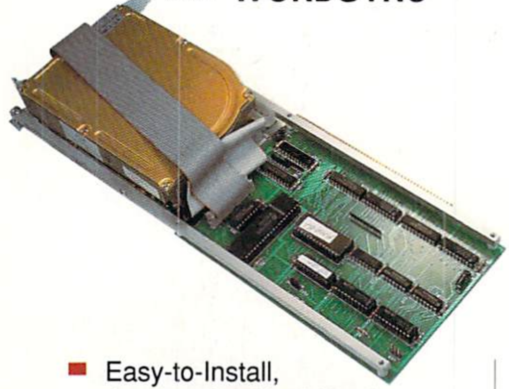

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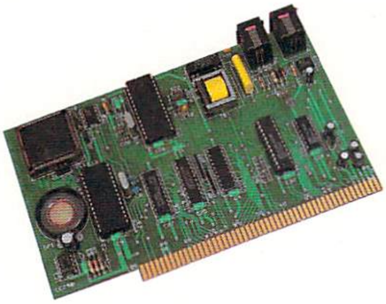

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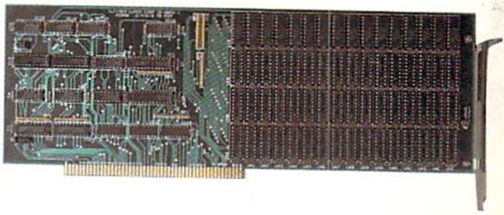

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